

A CHILTON

PUBLICATION

# The Iron Age

NATIONAL METALWORKING WEEKLY

July 22, 1954

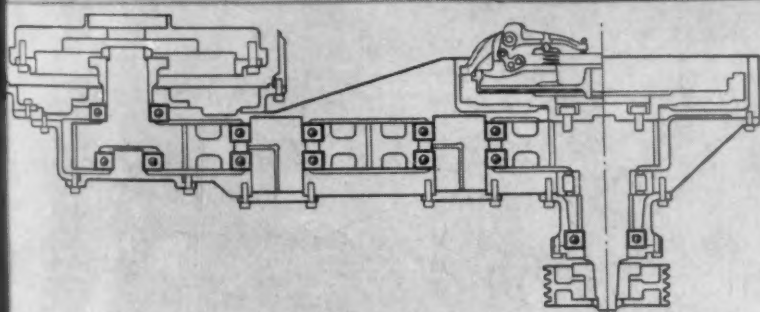
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## NEW DEPARTURES

work  
in Dart's  
new  
monster



This dual-engine giant has two torque converters, two transfer cases and two reverse gear boxes in which New Departure applications are found. Cross section of transfer case shows seven ball bearings—all New Departures!



Weight—50 tons! Payload—75 tons! It's Dart's mighty Monster, world's biggest truck; yet it's agile, too. Here's where New Departure ball bearings carry the loads . . . in the transfer cases, reversing gears and torque converters that deliver a 700-horsepower drive to tandem rear axles.

Whatever the load . . . radial, thrust or any combination . . . New Departure ball bearings mean precision performance. They maintain accurate positioning of gears and shafts . . . reduce wear and maintenance to the minimum.

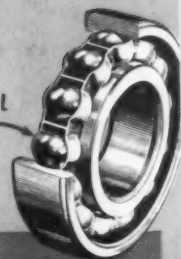
Learn what ball bearings can do for your product . . . talk to your New Departure engineer—soon!

UNIV. OF MICHIGAN

JUL 23 1954

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NOTHING ROLLS LIKE A BALL

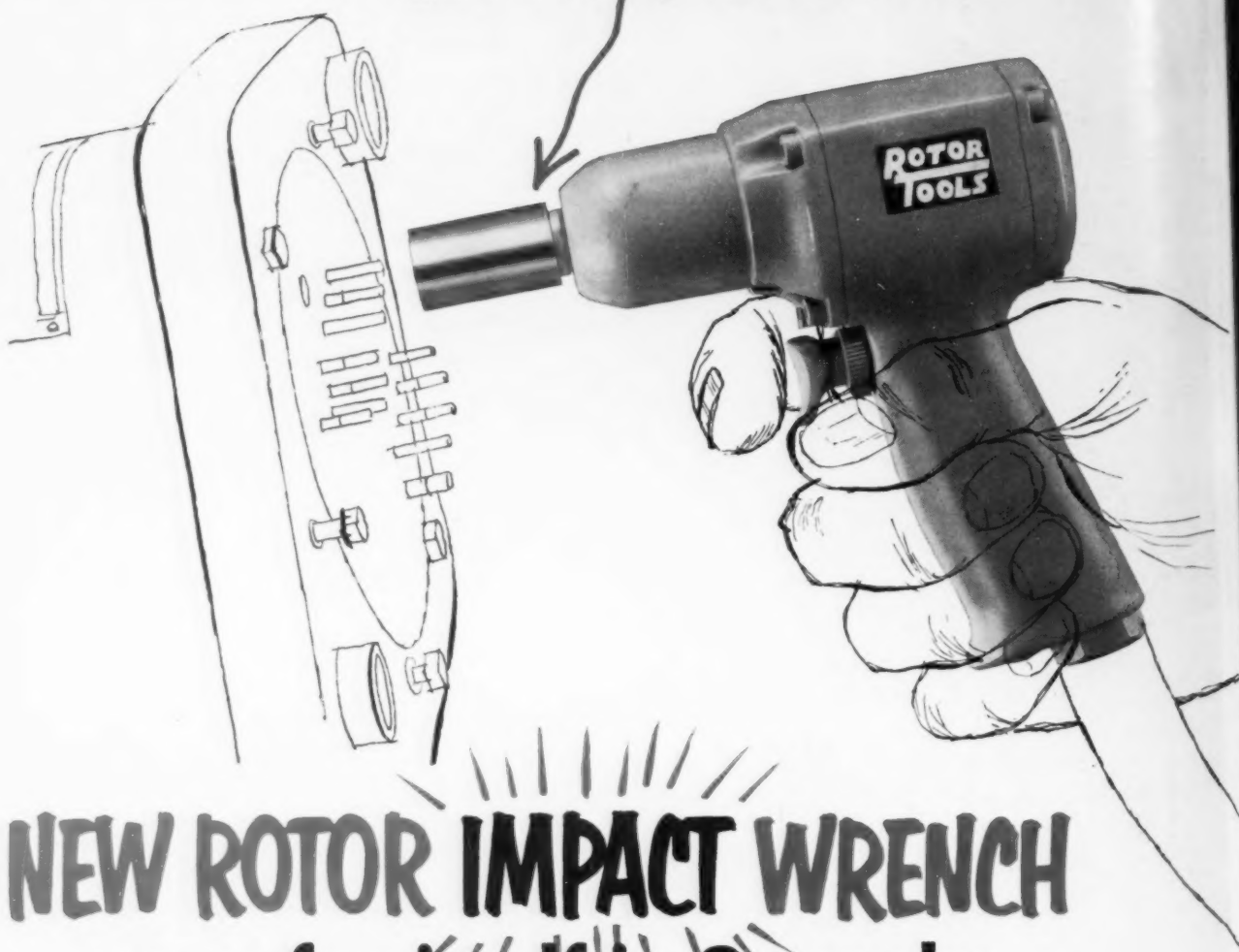


## NEW DEPARTURE

### BALL BEARINGS

NEW DEPARTURE • DIVISION OF GENERAL MOTORS • BRISTOL, CONNECTICUT  
Plants also in Meriden, Connecticut, and Sandusky, Ohio  
In Canada: McKinnon Industries Ltd., St. Catharines, Ontario

*Sets nuts 4 times as fast*



## NEW ROTOR IMPACT WRENCH pays for itself in 9 weeks

**JOB:** Setting hex and socket nuts in gearless drill heads. Tool used only 25% of productive time.

**FORMERLY:** By hand. Required 2 minutes per head. Often scored finished surface.

**NOW:** Use new Rotor J-2 Impact Wrenches. Time cut to 0.5 minute.

**RESULTS:** 4 times as fast. Savings paid for new Rotor Wrenches in 8.7 weeks. Eliminates scoring of surface.

A demonstration in your shop can show how these new Rotor tools can save *you* money! No obligation. Call your nearby Rotor analyst!

*Gives you 2100 solid  
blows per minute  
to KO your  
high costs.*



**ASK FOR  
BULLETIN  
No. 41**



SCREW  
DRIVER

THE **ROTOR TOOL** CO.  
CLEVELAND, OHIO

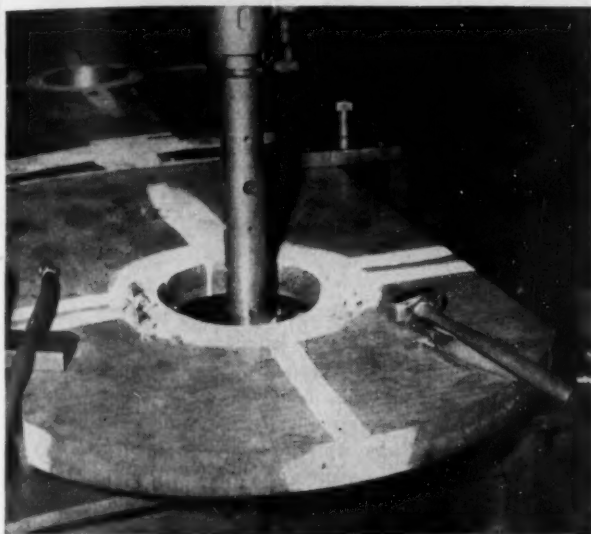
UNBIASED ANALYSIS OF PORTABLE TOOL PROBLEMS



IMPACT  
WRENCH



Burning the pin holes. Flame-cutting was also used to round the ends.



Boring the pin holes to finished size for 12-in. diameter hanger pins.



Planing the surface of the hanger to conform to angle formed between two connecting girders.

## Bridge hanger-links show workability of this high-strength, low-alloy steel

The eight hanger-links for the Passaic River Bridge, on the New Jersey Turnpike, provide an excellent demonstration of the workability of high-strength, low-alloy Mayari R. Located at each end of the 990-ft continuous girder—longest ever built in this country—these hangers connect the bridge to the approach spans.

The hangers were fabricated of 3-in. Mayari R plate at Bethlehem's Pottstown, Pa., works. Flame-cutting was used to round off the ends. Holes for the 12-in. hanger pins were also cut by burning. They were then bored to exact diameter.

Planing came into the picture, too. Because of a slight curvature in the bridge, the adjoining girders came together at an angle of 1 deg, 5 min, 14 sec, which of course meant that the hanger pins had to be out of parallel. This made it necessary to plane the hangers in such a way that both the upper and lower portions would bear evenly against the respective girders.

All these operations were accomplished as readily with Mayari R as they would have been with structural carbon steel. And Mayari R can be worked easily in other ways, too—riveting, cold forming, hot forming, shearing, punching. Its use is spreading rapidly, as you will discover if you leaf through our new Catalog 353. Write or call our nearest office for a copy.

BETHLEHEM STEEL COMPANY  
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by  
Bethlehem Pacific Coast Steel Corporation. Export  
Distributor: Bethlehem Steel Export Corporation



**Mayari R** *makes it lighter...stronger...longer lasting*

July 22, 1954



Starred items are digested at the right.

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Address mail to 100 E. 42 St., N. Y. 17, N. Y.

## NEWS DEVELOPMENTS

### ALUMINUM PRODUCTION STAYS AT PEAK RATE — P. 61

Production of primary aluminum this year will top 1953's record by about 150,000 tons despite a drop in shipments of wrought metal. Reasons: High cost of shutdowns and stockpile absorption of the surplus. Easy market doesn't mean overexpansion. Producers foresee continuing acceptance and new growth.

### C&NW PROFITS IN YEAR OF PIGGYBACK USE — P. 53

Almost forgotten in the ICC-railroad tussle on piggyback flatcars is that Chicago & Northwestern Ry has just about completed a year of operation. And it has proven to be a profitable operation, is expanding the service. Suspension order on other roads was lifted last week. Other roads are set to go.

### WHAT'S BEHIND THE STEEL AGREEMENT? — P. 67

There's more to the '54 steel wage settlement than meets the eye. A behind-the-scenes look reveals: (1) Industry feels it was following, not setting, pattern, (2) many feel money is cheap price for labor peace, (3) McDonald has won industry support, and (4) his union gains were not prime motive.

### SOUTH AMERICA PRESSES STEEL EXPANSIONS — P. 71

Steel production in South America seems destined to get a healthy lift from plans now being vigorously pushed. Aspirations for home-owned steel facilities are so strong that at least some plans will be fulfilled. Patriotism and prestige are added to the economic motives. Individual plans outlined.

### ARMY, INDUSTRY POOL AUTO RESEARCH — P. 82

A \$20 million Engineering Laboratories Div. is helping Army Ordnance gain and maintain leadership in military vehicle development and production. New facilities at Detroit Arsenal compare with central engineering and research sections in industry. Ordnance officers and industry experts pooled talent.

### SEEK NEW APPROACH TO PLANT DISPERSAL — P. 87

Federal defense planners are seeking a more effective way to force dispersal of industry from heavily built up areas. Problem must be worked out on an industry-by-industry basis. ODM is checking with other key agencies for defense production areas considered too concentrated and vulnerably located.



# of the Week in Metalworking

## ENGINEERING & PRODUCTION

### POWDER PROCESSES REMOVE TOUGH METAL — P. 105

Because the powder processes can sever tough materials very effectively, they have assumed an important position in industrial processing. First developed for stainless steels, they are now used on cast iron, high-temperature alloy steels, nickel and nickel alloys, copper and copper alloys, aluminum and even firebrick.

### PROGRESSIVE DIES SPEED PART OUTPUT — P. 109

Cup-shaped parts are being made in a progressive die setup that permits the blank to be cut loose from the strip. No handling is required. Scrap is removed automatically following a trim operation. The new setup replaces a dial-fed press operation. Production rates of 500 per hour of finished parts are obtained.

### HIGH TEMPERATURE ALLOYS: USAF REPORT — P. 112

Tool life expectancy in milling, drilling and turning high temperature alloys are compared in the U. S. Air Force Machinability Report. Unusual capacity for work hardening shown by these metals poses machining problems which require special handling. Carbide, cast alloy and high-speed steel tools were used in tests.

### LOW CARBON PARTS THROUGH-CARBURIZED — P. 115

Low-carbon steel parts, through-carburized to an equivalent high-carbon steel content, combine ease of forming with high physical properties. Success of the method hinges on critical carburizing step. Automatic control equipment and improved furnaces have made the operation practical in routine production.

### NEXT WEEK—METAL CLEANING, FINISHING HANDBOOK

Metal finishing's new importance to the metal working industry has been accompanied by rapid development of many new methods. These improved finishing and cleaning methods often provide the competitive edge in today's markets. To help you keep pace with these rapid developments and to aid you in selecting the right process for your product, THE IRON AGE brings you a completely new Handbook of Metal Cleaning and Metal Finishing.

**SUBJECTS:** Acid pickling, blast cleaning, bright dip, buffing, chemical cleaning, coating identification, deburring, degreasing, electrolytic pickling, electroplating, etching, immersion treatments, lacquering and drying, painting, phosphate coating, pickling, rustproofing.

## MARKETS & PRICES

### WHAT'S AHEAD FOR MACHINE TOOLS? — P. 65

New machine tool business in 1954 will be under '53 level, but better than had been anticipated, predicts Warner & Swasey president Charles J. Stilwell in an exclusive IRON AGE interview. Continuing good domestic replacement business is a potent factor. Product diversification is an important industry trend.

### ODM TO START STOCKPILING TITANIUM — P. 69

Titanium is added to the stockpile list on the heels of a Senate report urging expansion to 150,000-ton annual capacity. ODM has \$130 million for buying but won't start for some months. Biggest stumbling block to expansion now is: Should the U. S. gamble on when the Kroll process will be replaced.

### WHAT HIGHWAY PLAN MEANS TO INDUSTRY — P. 79

President Eisenhower's proposed 10-year \$50 billion highway modernization program means more than just another push for fast moving construction industry. Its after effects would be even more important. If put into effect, it would mean opening up of new markets, faster, cheaper freight, better plant location.

### EXPECT SOME PICKUP IN NEW STEEL ORDERS — P. 145

A pickup in steel orders should be noted within the next 30 days. The pickup would be reflected in September production. Meanwhile, July business is as sluggish as had been expected. Slight improvement is indicated for August business which is now pretty well in. Vacations are a big factor.

### SLOW STEEL MARKET SHOWS LITTLE CHANGE—P. 147

Sheets and bars continue weak. Oil country goods, galvanized sheets, remain fairly strong in the July slump. Construction activity throughout the nation has steadied demand and price of re-bars, structurals, and standard pipe. Construction wire is good, other types spotty. Optimists look for early fall upturn.

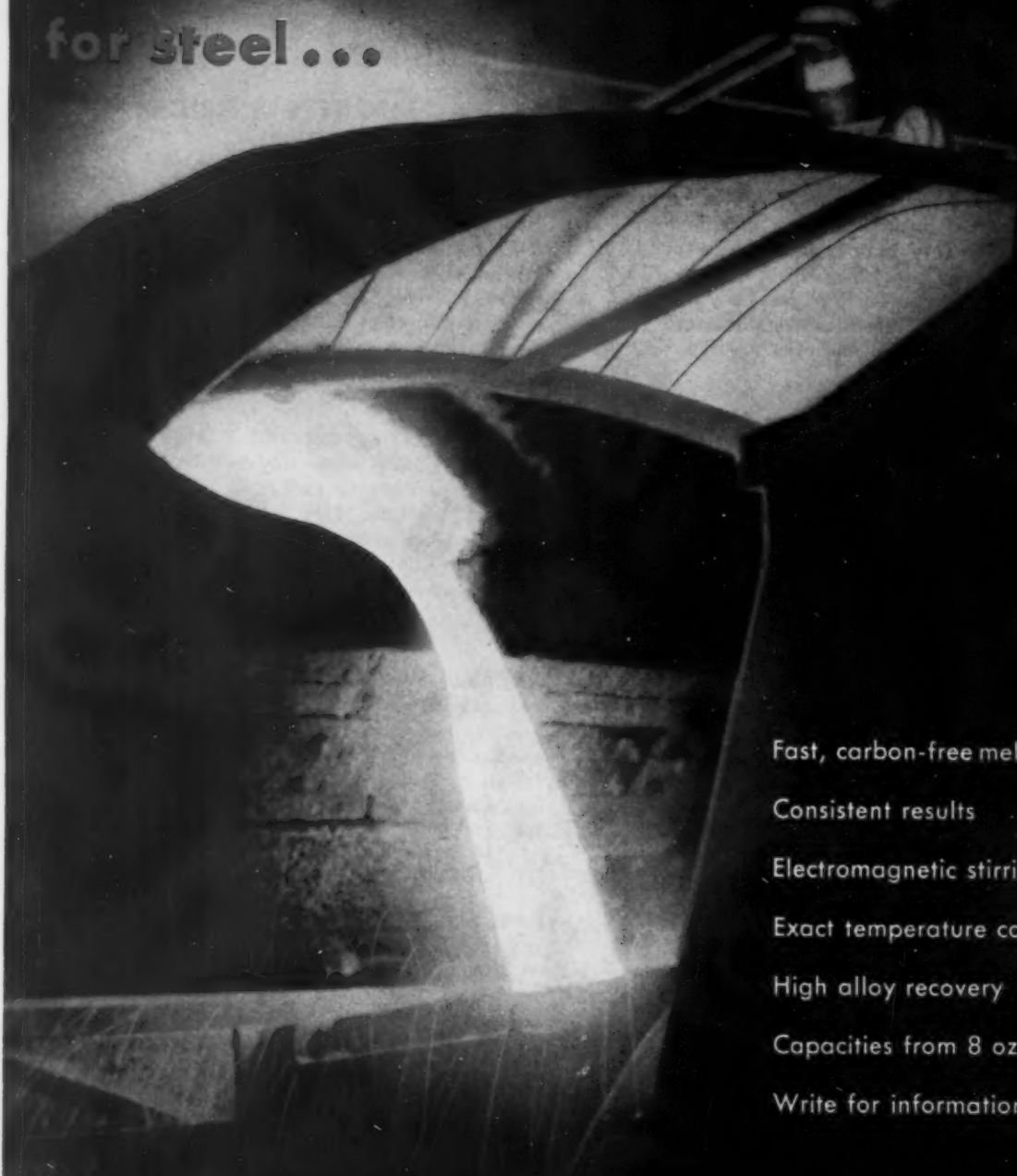
### REFINED COPPER STOCKS SHOW BIG DECLINE — P. 148

Tally sheet of the copper producers showed a drop of nearly 13,000 tons in domestic refined copper stocks and almost 75,000 tons for producers outside the U. S. This mainly reflects deliveries to the stockpile. And the stockpilers are again active in zinc and lead, coming out with their fiscal '55 buying.

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and the Engineering Index.



## When Comes the Day of Reckoning?

**I**N making business decisions no man can divorce himself from his personality, his politics, his likes or dislikes. He can push his emotions inward (and may suffer physical harm). He may make a strong effort toward objectivity. But to suppose that there ever has been or ever will be complete objectivity is to belie human nature and behavior.

Many conservative and sound thinking executives believe that "the day of reckoning" for some of our ridiculous economic actions is coming and that it won't be long until we pay the piper. Rightly they say it will be painful. Certainly when it does come it will be chaotic for millions. It could mean great and dangerous gains for communistic nations.

To get mixed up in what we think is going to happen "sometime" and what is going to happen in the near future is easy to do these days. We have to remember that about \$30 billion a year will be spent for defense for a long period. Another limited war may be the means of stopping a holocaust. We may forget that labor unions which were no big factor before 1940 are now firmly entrenched. They possess and use power never before dreamed of by the most rambunctious free booter of the past.

These things are part of the picture when we try to see the immediate and long term outlook. A man who must choose between a strike and a concession is faced with far more consequences than his counterpart was in 1929 or 1920. A citizen who wants to save his country would have to think long and painfully before he let his judgment stop production in a basic industry.

We may not like to face it but millions today have not had experience in business during a depression. Many of these people are in important positions. They will make their own views felt. They don't think as older heads do nor will many of them look backward.

To say that a new depression will change all this might be true. But such a depression while it might "teach" some people a lesson could ruin business and the country.

It is easier to warn and worry about "the day of reckoning" than it is to tell when it will get here. If you are wrong in your guess you may be passing up opportunities to make your country powerful, your company strong and your employees bigger spenders and investors.

*Tom Campbell*

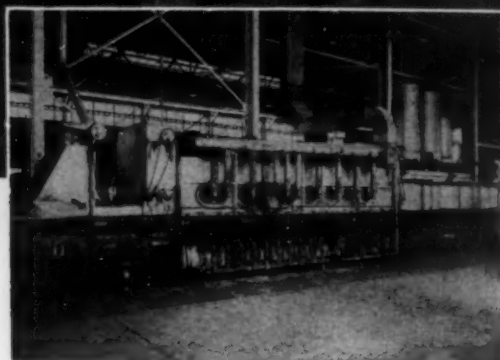
Editor





Gas-fired copper billet heating furnace, where billets are heated prior to processing.

AT  
**REVERE COPPER AND BRASS INCORPORATED**  
 LOS ANGELES, CALIFORNIA



Dempsey Gas-fired annealing furnace in the Los Angeles plant of Revere Copper and Brass Incorporated.

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Throughout *all* industry, GAS is a production-line fuel. Why not call your Gas Equipment Dealer or Gas Company Representative right away, and find out where GAS may help you improve the efficiency of your operation.



**AMERICAN GAS ASSOCIATION**

420 LEXINGTON AVENUE, NEW YORK 17, NEW YORK

# Dear Editor:

## Letters from readers

### Where To Now?

Sir:

I have belatedly gone through the June 24 issue of *THE IRON AGE* and have just finished reading your excellent editorial, "Where To Now?" I think you and your magazine are to be congratulated on saying something which badly needs being said—and being repeated over and over again.

I think it is incredible and disturbing that so many of our industrial publications will not face the fact that on occasion they must editorially discuss the most challenging problem of our time. During the past few months I have read hundreds of copies of scores of these publications and your editorial is the very first which I have seen that says something about Communist aggression.

You may be interested to know that a group of us in various professions—law, public relations, publications, etc.—have gotten together recently and formed a small group which, beginning in September, is going to make an all-out effort to awaken this nation to what it is facing.

Again, congratulations.

P. C. WALLACH  
Public Relations &  
Advertising Director

H. K. Porter Co., Inc.  
New York

### Titanium Machinability

Sir:

We would appreciate it very much if you would correct the machining information concerning our MST 3A1-5Cr titanium alloy that appeared in your May 6 issue in the article titled, "Titanium Air Force Machinability Report."

The machining data in the article was based on our old induction melted material with a carbon content of 0.4 per cent. For the past year, this grade of titanium has been produced by our double melting, consumable electrode process. As a result, the carbon content is held under 0.1 per cent. Carbon solubility in titanium is approximately 0.2 per cent. An excess of carbon above this solubility limit forms a hard carbide which markedly reduces tool life.

Machining studies conducted by Metcut Research Associates on our double melted MST 3A1-5Cr alloy are shown below. As the machining tests were conducted by the same research organization that compiled the original data in your article, the speeds, feeds, tool angles and tool materials are identical.

#### MST 3A1-5Cr — BHN 340

##### High Speed Tool Life

Cutting Speed ft/min	Cutting Time min
30	60
35	38
40	22
45	10

##### Carbide Tool Life

Cutting Speed ft/min	Cutting Time min
150	48
175	30
200	15
250	4

If the above points were plotted on the graphs in the mentioned article, the resulting curves for tool life in machining the MST 3A1-5Cr alloy material would be comparable to the other grades of titanium material shown. We realize that the information you printed came from the Air Force Machinability Report, however, since your magazine has such a wide circulation, we would appreciate it if you would correct the information as shown above. Thank you.

J. A. ROEMER  
President

Mallory-Sharon Titanium Corp.  
Niles, Ohio.

### Portable Press Feed

Sir:

We note your reference on the Forecast page of your July 8 issue to a motor-driven portable press feed unit.

We would like to have more information on this unit and would appreciate your advising us as to where we may secure same.

G. R. KINNEY

J. L. Osgood Machinery & Tool Co.  
Buffalo

More details may be obtained from Hattau Engineering Co., 721 Wanda Ave., Detroit 20, Mich.—Ed.

### Lubricating Material

Sir:

We note in your July 1 issue, p. 61, a paragraph on colloidal molybdenum disulfide in an epoxy resin base. We would be greatly interested in just who puts out this material.

H. B. PETERSON  
Chief Designer

American Can Co.  
San Francisco

Contact the News & Feature Bureau, John Mather Lupton Co., Inc., 420 Lexington Ave., New York 17, N. Y., for further information.—Ed.

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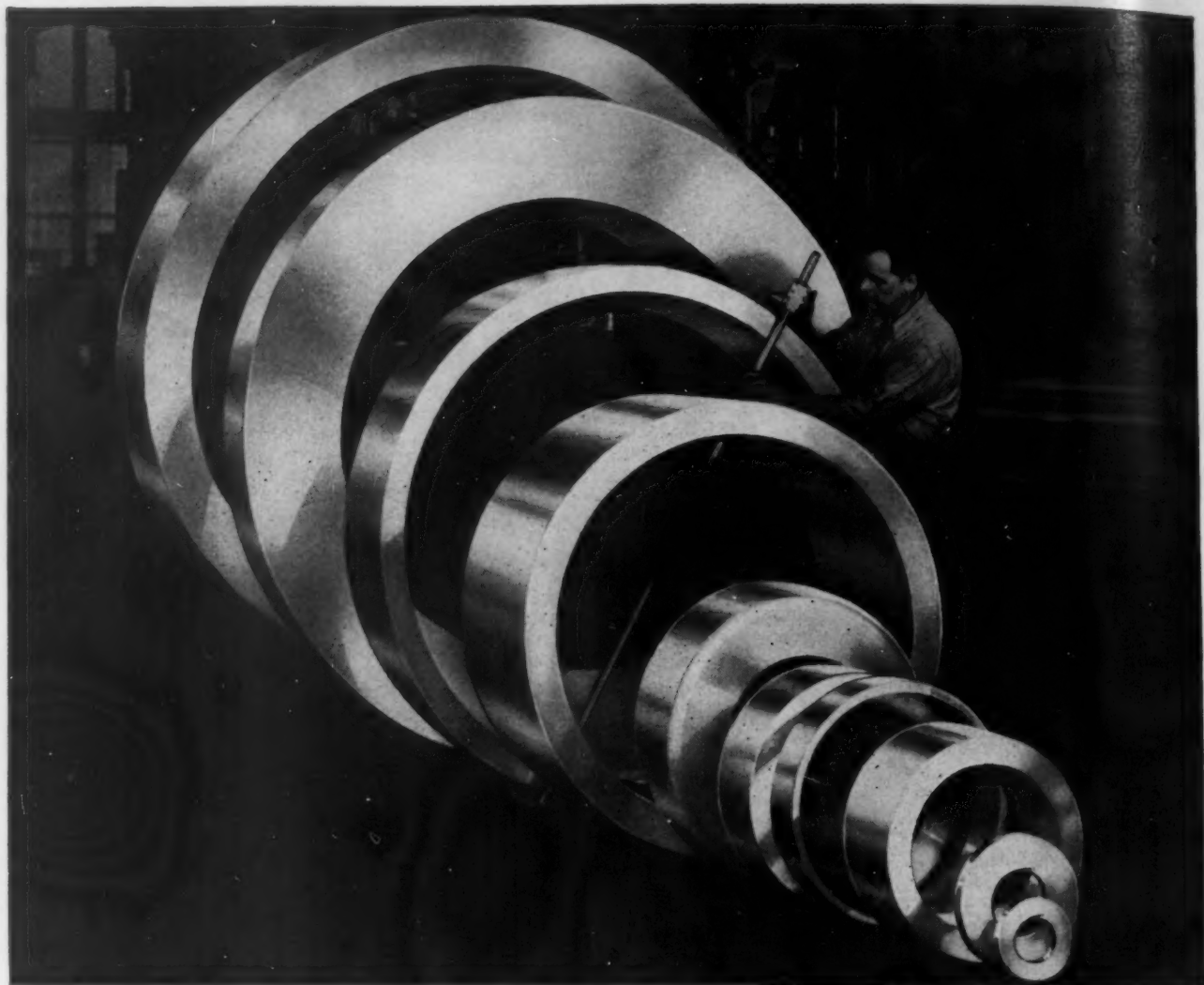
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# **MIDVALE**



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# Fatigue Cracks

by William M. Coffey

## Sports Dept.

We were sort of attracted to a sporting event held a few days ago in Atlantic City. It was Hotel Skills Day. First event was the Bellmen's Relay Race with teams of three covering a distance of three hundred yards while carrying a piece of luggage. Next was the Waiter's Hand Tray Race of a distance of one hundred yards. Third event was the Waiter's Head Tray Race over the same distance, followed by the Bed Making Contest for Maids and the Chef's Carving Contest. A parade of hotel employees in full uniform preceded the great games. Just like the Olympics.

## New Books Dept.

From the Government in Washington we received its latest list of best sellers:

**Shellfish With Certificates**—full details why some of the crabs or lobsters you catch have certificates and others fail to graduate.

**Informal Games for Soldiers**—such activities as football, basketball, and Spit in the Ocean are included with complete instructions for playing each game and laying out the necessary courts or playing fields. Just a simple GI blanket, with a foot-locker as a back-stop, is recommended for an old, but highly popular game played with little cubes with dots on them. Ever so much fun.

**Hold On To Your Teeth**—this enjoyable little booklet tells how not to let your teeth down and finally reveals how necessary teeth really are to you and to me.

**The School Lunch**—the most serious work on the educational contribution of the school lunch available. Gives some reasons why children should eat lunch.

**The Imported Fire Ant**—chapter and verse on the import-export market for ants.

## Letters Dept.

Herb Caen in the San Francisco *Examiner* tells about all the angry letters people are writing to a western railroad complaining about a "miserable eyesore" of a sign the road erected. They are answered by a smooth, ingratiating form letter which seems to satisfy everyone. All of which reminds Herb of a friend who wrote a sharp note complaining about bedbugs in his berth, which would've been fine

except that, by mistake, his original letter had been stapled to the back of the last page. And scrawled across it was this pencilled notation: "Send this censored blank the bedbug letter."

And we like this resolution introduced by six Tennessee legislators in the State House of Representatives, sent us by the Wolf Envelope Company, Cleveland.

"Whereas the bonded indebtedness of the State of Tennessee has reached an all-time high and that taxes have now reached the saturation point. Therefore, be it resolved that the speaker appoint a committee to arrange a meeting with Chief Standing Deer of the Cherokee Indian nation, with authority to repeal the Treaty of Tellico Plains and thereby restore to said Indian nation that portion of land south of the Ohio River known as the State of Tennessee."

## Puzzlers

How about that cow puzzler? Answer: The farmer's sons must borrow one cow from a neighbor or someplace, give 6 cows to the 1st son, 9 to the second son and 2 to the 3rd son. Then the borrowed cow is returned and everything is peaceful. Winners: Rusty Walbeck, Charlsie and the GSCC Cow Counters, Robert V. Brown, Arthur Sipp, Patricia Haneline, H. I. Greves, M. A. Powell, R. H. Schule, G. C. Lyon, William H. Lukens, A. J. Reardon, Neil Wender, Sidney Cross, P. T. Reilly, A. G. Liska, C. W. McKinley, Lee Dagley, Sylvia Lytle, Morris Ertman, John Foster Diplomat, G. Balentine, R. C. Hess, E. H. Lewis, C. D. Ceske, R. H. Messinger, Charles Dunlap, R. B. English, R. C. Schiller, James Kral, Bob Larkin, Ron Hazen, H. M. Moll, and John J. Codella.

## New Puzzler

Nora LaDow calls this her pursuit problem: Take a square field, a rabbit at the southeast corner and a hound at each of the northeast and northwest corners. At the same instant, the rabbit starts running toward the southwest corner at 15 mph and both dogs start and continue to run towards the rabbit until the rabbit just barely escapes both dogs through a hole in the fence at the southwest corner. What is the speed of each dog?

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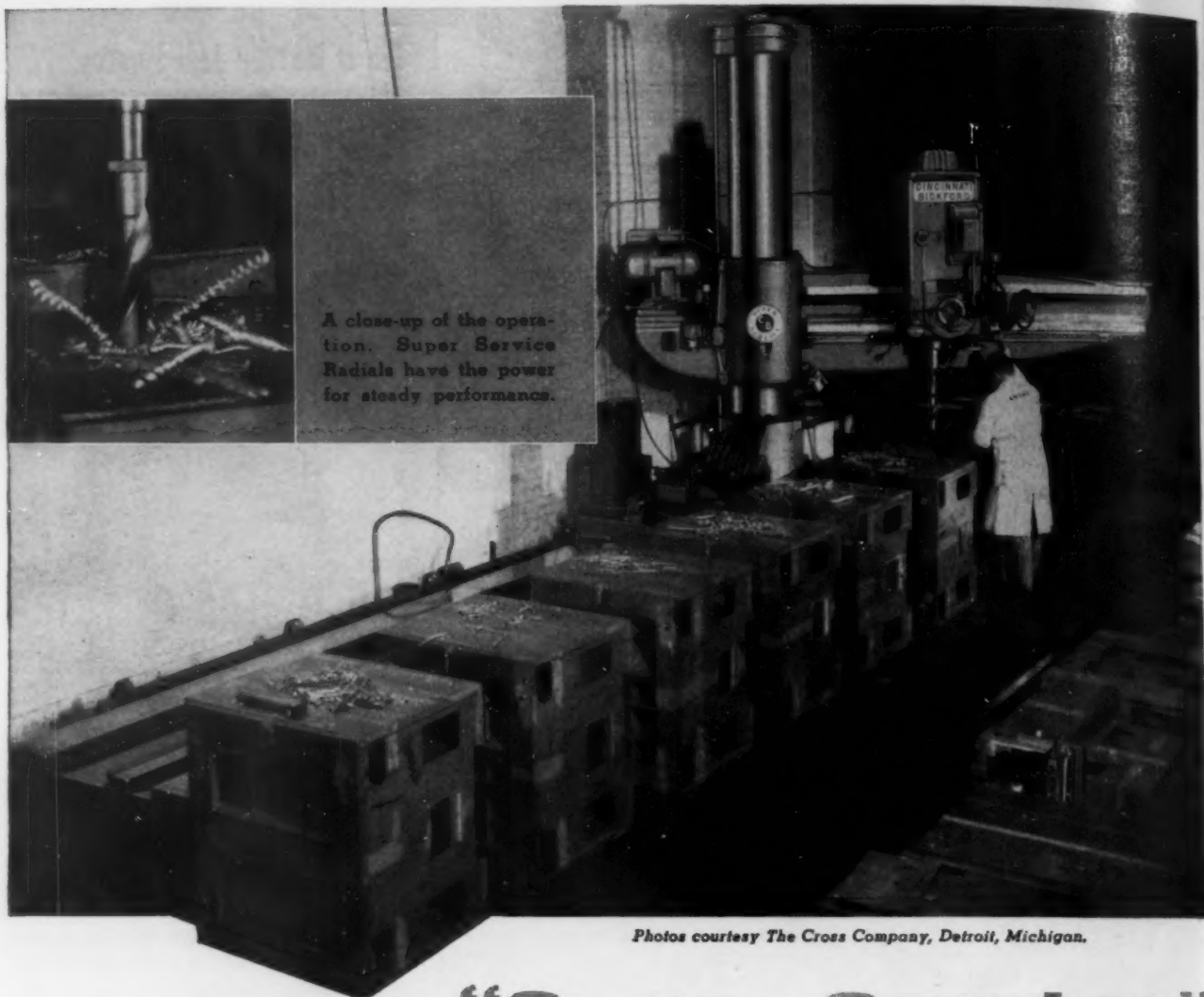
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A close-up of the operation. Super Service Radials have the power for steady performance.

*Photos courtesy The Cross Company, Detroit, Michigan.*

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Here at The Cross Company ten Cincinnati Bickford Super Service Radial Drills are at work . . . On this job, the traveling Radial with sliding base, saves time and gives high production with necessary accuracy. In each of the 7 bases handled here there are 20 holes drilled

and tapped and one 3" diameter bored and chamfered. The Cross Company say these drilling machines "bring easy handling, dependability and durability."

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**THE CINCINNATI BICKFORD TOOL CO.**  
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## THE IRON AGE Newsfront

**SLOW MARKET CONDITIONS AND SHORT-TERM ORDERING** are forcing some suppliers to double in brass as warehouses for their customers. Steel mills are maintaining stocks of some products for quick delivery. A new plant of a refractories producer will contain more warehousing space than older plants.

**QUICK METHOD OF IDENTIFYING** heat-treated aircraft forgings in plane factories is to dip them in dye vats. This plan, now practiced by one large plane builder, is faster than hand-stamping each part.

**A NEW ALKALINE ALUMINUM ETCHANT** is reported to provide rapid, uniform controlled etch on aluminum while eliminating a common problem associated with use of this type material. The etchant does not form a hard sludge on equipment surfaces.

**GEARS FOR AUTOMOBILES AND TRACTORS** are being largely completed on forge hammers in Germany, according to recent reports. Machining operations have not been eliminated entirely but important gains in metal conservation have been achieved.

**LOOK FOR A MAJOR AUTOMAKER TO SHUT DOWN** completely for the entire month of August. Similar shutdowns for announced vacations, inventory, and model changes will be the pattern throughout much of the industry in the late summer months.

**ANOTHER ORE FIND IN WESTERN ONTARIO'S** Hogarth open pit may add millions of tons to the already large output from the Steep Rock Iron Mine. Hidden deposit dredged up recently in the former wilderness lake has been analyzed at 61.5 pct iron. Promoters say it could double original estimate of a billion ton potential.

**INDEPENDENT AUTO PARTS WHOLESALERS** will probably not be removed from coverage by government Wage-Hour law. Wholesalers contend they should be released from coverage to be on an even business basis with car dealers who sell parts. U. S. Labor Dept. heard this proposal recently, but did not act.

**EARNINGS IN THE STEEL INDUSTRY** for the second quarter may compare favorably with the first quarter--despite declines in sales, production, and shipments. Production, though lower was at a relatively steady pace, and employment was brought into line with business.

**COLD EXTRUDED AUTOMOTIVE PISTON PINS** in quantity are a certainty for fall production. At least three producers are reported in the tooling stage. One estimate: The process will dominate production on the item within two years.

**THOUGH SELLING OF NO. 1 HEAVY MELTING** scrap on Chicago commodity exchange will not begin Aug. 1, plan continues to go ahead. Only thing holding it up at present, paper work, probably will be concluded by the latter part of August.

**IRON POWDER PRODUCERS ARE TAKING ANOTHER LOOK** at their vastly expanded capacity. Anticipating many new applications, producers added new facilities. Heavy tonnage uses--especially from Ordnance--have been slow in developing and current use is running about a sixth of capacity.



# CMP

## GOLD ROLLED STRIP STEEL

**H**aving ear trouble? If your drawn product requires trimming to remove ears or scallops, you may be able to reduce your end-product cost by the use of CMP non-earing (non-scalloping) cold rolled strip steel.

This is one of many ways in which CMP engineers specifications and processing methods to enable strip steel users to produce better products at lower cost.

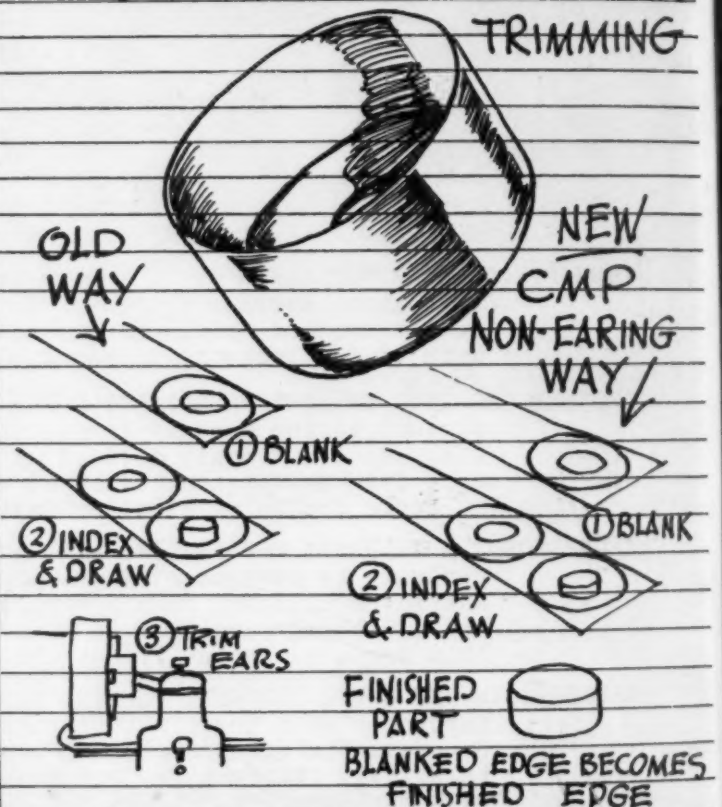
Perhaps we can help you to reduce end-product cost without capital investment.

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*a practical way*  
to reduce end-product costs  
WITHOUT CAPITAL INVESTMENT

### TYPICAL CASE

*Specially processed for the requirement, CMP provides a non-earing strip steel for deep drawn parts and*  
**ELIMINATES EXPENSIVE EAR TRIMMING**



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PRECISION STEEL WAREHOUSE, INC. 4425 W. Kinzie, Chicago Phone: COLUMBUS 1-2700

## 61

others will. And each new market that is taken over by aluminum represents an increase that isn't dependent on short-range market fluctuations.

## Prices:

### Wage boost, expansion costs to hike aluminum prices.

Settlement of a new wage agreement in the aluminum industry, still under negotiation at press time, is expected to trigger a price increase—but the gunpowder behind the increase is capital investment.

About half of current U. S. aluminum capacity has been built since the start of hostilities in Korea at a capital cost estimated by producers to be triple the per-ton cost of older facilities. Admittedly, accelerated amortization enables the industry to write off the cost in 5 years and the new plants are more efficient. But the money must be spent and new capital must be attracted.

### Wages Follow Steel

Based on a 5 pct return on investment, a new producer would have to charge about 25¢ per lb for aluminum if he bought power and alumina. If the producer decided to erect his own alumina facilities and power plant the price for a 5 pct return would have to be about 34¢ per lb, industry sources estimate.

This is precisely the reason why so few new producers were established during the Korean war expansion. Only two new firms got started on aluminum, Anaconda Aluminum Co. and Harvey Aluminum Co. Neither is in production as yet.

The new wage contract is expected to follow the steel pattern and cost aluminum producers about 10¢ per hour more. While labor isn't a very big factor in pig and ingot production costs, it is a major factor in wrought products. So a price increase, especially in mill products, is likely to follow a wage increase.

Current prices are based largely on plant costs for older facilities

## EPOXIES: New Resins Have Many Uses

**Ethoxylenes star as bonding agents . . . Have exceptional insulating, corrosion resisting qualities . . . Aids plastic pipe . . . High production costs an immediate problem.**

Fast-swinging plastics spotlight is now centering on a young juvenile who may steal the show completely as far as metalworkers are concerned—the ethoxylene resins group, or epoxies.

Just turned five, epoxies have already edged out older relatives as far as corrosion-resistant coatings are concerned. And they're rapidly getting taller in the tool and die field, particularly when alloyed with other synthetics. But the child prodigy may be destined for even bigger things.

Shell Chemical believes epoxies are well on the way to licking the two biggest drawbacks to plastic pipe: inability to stand high pressures and lack of corrosion resistance. And it is reported that epoxies can be applied to steel before deep drawing, form a protective coat which remains unbroken after the drawing operation.

Remarkable bonding properties of epoxies are also moving in on welding and soldering. Low heat and little pressure are required to form high-strength bonds between metals, ceramics, wood and a host of other materials. They're already being used to bond steel and aluminum facing sheets to honeycomb cores of metal or paper in products ranging from elevator doors to bomber components.

Excellent electrical insulating properties are another major factor in epoxies' remarkable growth. Delicate components such as transistors are sealed in the tough resins for protection, while printed circuits often use epoxies reinforced with synthetic fiber as backing plates.

The epoxies were first discovered in 1946 at two places at once. Devoe & Reynolds developed them in this country while Ciba Co. was independently doing the same in Switzerland. Since then Devoe has licensed Shell Chemical and Union Carbide & Carbon's Bakelite to make the resins, bringing the total number of producers to four.

Production today is small, running 0.5 pct of the approximately 3 billion lb of synthetic resins produced in the U. S. last year. Other large plastics producers are researching the resins, but immediate production is doubtful. Investment is high, and more high-volume applications are needed.

Paint companies still account for about 75 pct of annual consumption, with appliance makers among their major customers. Great hope in this area is the adoption of epoxy-based paints or coatings by the auto industry. One problem for appliance makers: Epoxies go better with colors than with white.

Meanwhile producers are seeking new uses, trying to dodge the old ugly triangle of low = production high cost = frightened sales prospects. Despite a round of expansion to about 30 million annual ton capacity, cost is still about \$1 per lb for liquid types.

capital, producers must be able to assure an adequate return for investors. Many in the industry feel this makes higher aluminum prices a must.

Outlook, then, is for a price increase next month (labor contracts expire July 31). The boost can be expected to cover both the increased labor costs and the higher cost of the latest expansion.

plus boosts which followed labor settlements during the past few years. But now that the Big Three are in regular production on their new plants they are able to determine costs realistically.

Industry members are definitely optimistic. They're sure that aluminum will continue to grow. And the growth will require new investments. To attract this new



# PIGGYBACK: To C&NW, It's A Deal

First year of trailer-on-flatcar hauling proves profitable to Chicago & Northwestern . . . Served broader area . . . Rates compete with trucks . . . Other roads set—By K. W. Bennett.

Almost forgotten in the ICC-railroad piggyback tussle is the Chicago & Northwestern Railway, which will have been operating railroad-owned piggyback with proven economy for exactly one year, come Aug. 12. This, out of Chicago, believed by at least one road the highest less-than-carload shipping area in the U. S.

Last week "TOFCEE" (Trailer-on-Flatcar, preferred by many to the name piggyback) shipments were on the rails. ICC lifted its suspension order last Friday. The Northwestern, as of Friday, was announcing the expansion of its piggyback operation to blanket the eastern Lake Michigan shore, including Gary, Indiana Harbor, Hammond and Whiting, Ind., through Chicago and suburbs north through Waukegan, Milwaukee, Neenah-Menasha and on up to De Pere and Green Bay. Minneapolis is being studied, has already been tested.

## Others Ready Service

The Pennsylvania, Baltimore & Ohio, Erie, Delaware, Lackawanna & Western, New York Central, Chicago & St. Louis, Nickel Plate, and the Wabash were prepared to move. Their current plan: with

minor modifications, pretty much the system that Northwestern has been proving out over the past year.

Moving at truck rates, railroad freight is moved in railroad owned or leased trucks to a standard 53-ft railroad flatcar for hauling via rail to the consumer. This plan was the one affected by the ICC hold order. The Northwestern was almost the only road using this plan that wasn't affected, is the only road that has been using such a plan this long. Union Pacific, which began service June 1 this year, was another exception. The Great Northern was another.

## Compete With Truckers

Though many early backers of piggyback believed that it was most economic in long haul operations, the Chicago & Northwestern experience suggests it will work for fairly short runs.

Said Northwestern President Paul E. Feucht in May this year, "... We were able to accomplish . . . a reduction in the cost of handling our tonnage by approximately \$6 to \$7 a ton, saving four handlings, two at originating and two at destination terminals, and improving our service to our cus-

tomers from 24 to 48 hours. Effective Mar. 1 of this year we published a new tariff applicable to freight in trailers on flatcars between Chicago and Green Bay with rates and minimums equal to those of common carrier truckers."

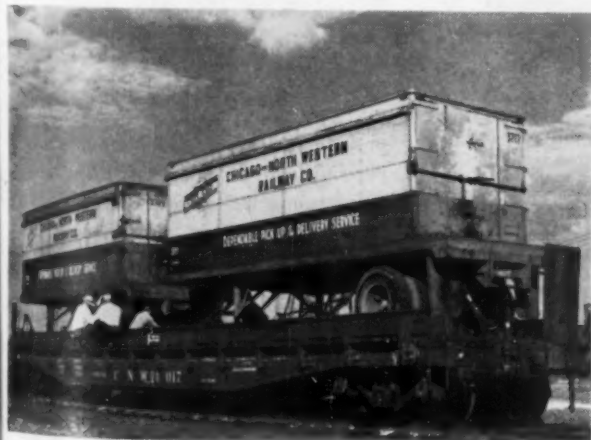
This from a railroad that describes itself as "a short haul carrier and for that reason . . . particularly susceptible to the inroads of trucking operations . . ." As of May, the Chicago & Northwestern had 21 reworked standard 53-ft flats in service and 48 trailers of 24-ft length.

## Rebuild Standard Flats

The Northwestern operation suggests a careful study over a long period. For instance, stout magnesium ramps, capable of two-man operation, have replaced permanent docks for rail-trailer unloading. Standard railway equipment with relatively minor changes (side boards, chain-and-spring tie-downs, relatively simple blocking) does the hauling.

## Who Gets It

With a high percentage of the roads involved rebuilding standard cars, at least for the present, the impact on carbuilders will not be impressive. One road has put a hold order on 200 75-ft cars. Another will order 100, is using standard flats at present. Another has 35 flats in use, about 150 leased 24-ft truck trailers. One potential order for special 25-ft cars may go to 350 cars, but will not be finalized until later this year.



TRAILERS on flat cars can be delivered by truck directly from unloading point to consumer.



MAGNESIUM flat car unloading ramps eliminate need for permanent unloading docks.

## FURNACE: Pressure-Top Use Gains

**License U. S. Steel to use pressurized blast furnace method  
... Boosts iron output, cuts coke use, can use poorer ores ...  
Reds convert furnaces without licenses.**

Practice of high top-pressure blast furnace operation promises to grow in this country as a result of a licensing agreement which has been signed by United States Steel Corp. and Arthur D. Little, Inc.

The license agreement permits the steel corporation to equip its blast furnaces for high top-pressure operation which was introduced several years ago by Arthur D. Little. Experience of other firms on a commercial basis has demonstrated production gains of as much as 15 pct.

### Won't Convert All

U. S. Steel has been studying the practice for some time, and has conducted a good deal of experimental work of its own. It is convinced that advantages of this type operation are substantial.

But, while the license agreement indicates the corporation plans to utilize high top-pressure practice, it does not plan to convert all its blast furnaces at once. It will first use the process on a limited commercial scale. This will permit collection of very useful operating data which will provide the basis for later decision as to how many furnaces will ultimately be converted.

Top pressure operation is accomplished by throttling the gases from the blast furnace. This reduces gas velocity through the furnace, increases the pressure of gases, and improves gas-solid contact.

### Thoroughly Tested

Among the resultant benefits are: (1) Pig iron output is increased by at least 12½ pct; (2) coke consumption is reduced, or wind volume may be boosted 10 to 15 pct without increasing coke rate; and (3) iron may be produced from leaner ores.

Cost of such an installation is about 2 pct of the original cost of the furnace.

Successful application and acceptance of the process came only

after several years of basic research in ADL laboratories followed by pilot plant operations and demonstration to the steel industry.

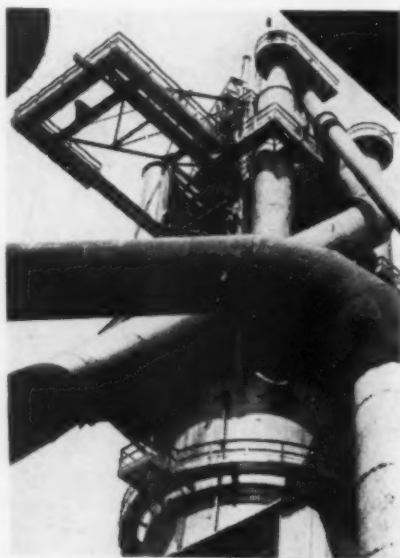
The high top-pressure process was first tried in cooperative experiments during World War II by the War Metallurgy Committee and Republic Steel Corp. Since 1946 Republic has steadily increased its reliance on the process.

Today there are nine licensed pressurized furnaces in operation in the U. S. Licenses have also been granted English and European steel firms. However, the only furnace in Western Europe known to be in commercial operation is the No. 2 furnace of Colvilles, Ltd., in Scotland. This furnace was converted in January 1951.

### Reds May Have Lead

Interest in the process in Western Europe has resulted largely from the efforts of Union Carbide and Carbon Corp., connected with the development since its beginning.

The Russians, although they got a late start, may be moving as fast



**HIGH TOP** pressure blast furnace operation increases pig iron output by 12.5 pct.

or faster than U. S. firms in converting to pressure top practice.

It was announced recently by the British Broadcasting Co. that the U.S.S.R. Zaporozhye Iron & Steel Works had converted its four blast furnaces to top pressure operation. These are in addition to at least seven others known to have been converted to pressure behind the Iron Curtain. Other sources indicate even more Red furnaces are either being converted or are already operating under high top-pressure.

All are without licenses.

## Shipbuilding:

**Aid may be coming for shipbuilding industry.**

The nation's lagging shipbuilding industry will get a \$150 million boost if Congress goes along with a House Armed Services Committee recommendation authorizing the Navy to buy 20 high speed 25,000-ton tankers.

In making the recommendation, the House unit turned down a Senate bill which would have permitted the Military Sea Transportation Service to charter for 10-year periods 20 new tankers to be built with private capital.

Rep. Carl Vinson, D., Ga., sponsor of the bill, says one of its main objectives is to encourage shipbuilding. Diversification of orders among different sections of the country with regard to depressed areas will be easier to achieve if the Navy builds the vessels, he says.

Congressional leaders, however, doubt that the house and Senate can get together on a measure and push through a supplemental appropriation before the close of the session.

Meanwhile, Sen. John M. Butler, R., Md., introduced a bill to provide for construction of 60 cargo and cargo-passenger ships a year under the Merchant Marine Act.

Mr. Butler points out that no new shipbuilding contracts over 1000 tons have been signed for over a year and a half and that lack of orders is hurting shipyards.

## INTERVIEWS.....

### What's Ahead for Machine Tools

- ♦ New machine tool business in 1954 will be under '53 levels, but better than had been anticipated, predicts Warner & Swasey President Charles J. Stilwell in mid-year interview.
- ♦ Continuing good domestic replacement business is potent market factor. Product diversification important industry trend.
- ♦ "Reasonable" leasing arrangements, faster depreciation strong stimulants. Industry's increased capacity, high degree of machinery obsolescence in U. S. plants cuts "boom-or-bust" dangers.

*Q. What kind of a year will 1954 be for the machine tool industry?*

A. Not so big a year for the machine tool industry as 1953, because 1953 included the winding up of a good many orders placed originally on behalf of Korea. However, 1954 is turning out to be a better year than was anticipated in some quarters due chiefly to the sustained volume of domestic replacement business.

*Q. What part will diversification play in current and future planning?*

A. Diversification is spreading throughout the machine tool industry. It takes a variety of forms. Some companies are adding new types and sizes of machine tools—others, like our own company, are adding products outside the machine tool field which, nevertheless, require machine tool building techniques for their manufacture. Diversification of product is a protection against the extremities of the cycle which in past years has been one of the main problems of the machine tool industry.

*Q. Is growing trend toward leasing of capital equipment healthy?*

A. As is the case with many practices that might be mentioned,

the trend toward leasing of capital equipment is healthy up to a certain point. It will stimulate sales particularly by aiding the small company which has insufficient capital and can only finance capital equipment out of the production performed on that equipment. However, if extended beyond the reasonable limit, leasing would involve the tying up of too much capital and the development of what might turn out to be an unhealthy credit situation.

*Q. How will faster tax write-offs affect machine tool sales?*

A. Without any question, faster tax writeoffs will stimulate replacement and modernization programs.

*Q. Will prices remain fairly stable this year?*

A. As to that, your guess is as good as mine. I would say that the price trend in the machine tool industry will follow, in general, the price trend throughout all industry, whatever that may be. Of course machine tools are not a standard homogeneous product. You can't talk about the price of machine tools the way you can about the price of wheat or steel.



Charles J. Stilwell  
President  
The Warner & Swasey Co.

*Q. How will automation affect design and sales patterns?*

A. I don't know just what you mean by "automation." If you are talking about completely automatic machines designed for special purposes, I would say that the trend in that direction is definitely on the increase. But the market for such machines is limited to companies having large volume repetitive operations. If by automation you mean building more automatic controls into general purpose machines, I would say that the trend is accelerated and will definitely affect design and sales patterns.

*Q. How much impact is government leasing having on the industry?*

A. Thus far, government leasing has had practically no impact upon the industry. Theoretically government-owned machines belonging to the National Defense Reserve are not supposed to be leased to private contractors for civilian production. However, there is a clause in the regulations which says that under certain circumstances such leasing *can be done*, and there have been one or two such instances. This is what has given rise to a great deal of current conversation on the subject. If the government's original intent is adhered to, this will not be a serious problem.

Turn Page





**New AirProbe** extends economical application of air gaging to more dimensional control problems. Here, a new Federal AirProbe . . . no larger than a regular cigarette . . . is combined with the well-known Federal Model 36 B-6 Bench Hole Gage and a Dimensionair.

## Costly Air Gages No Longer Needed?

**Air Gaging need no longer be expensive.** The advent of the new Federal AirProbe makes it possible to make an air gage out of practically any regular Federal catalog gage. It is not *always* necessary to design a completely special air gage. This, plus the very reasonable price of the Federal Dimensionair and of the AirProbe, greatly extends the possibility of gaging by air.

**This new spindle-like device can be incorporated in most Federal Catalog Gages.** Direct readings of dimensional variations are then indicated on the precisely calibrated dial of the Federal Dimensionair. With such economical combinations now available, why be hasty about spending time and money on specially-designed and built air gages? Investigate first!

**Your investigation may surprise**

**you!** If you have been quoted on special air gages, you'll be surprised at how little a Federal AirProbe combination costs. You may even learn that air gaging is not required at all . . . that a Federal Catalog Dial Indicator Gage can do the job!

**Because Federal offers you a choice of practically all systems of gaging . . .** air, dial indicating, electrical and electronic . . . more than 30,000 designs in all . . . you'll get an unbiased recommendation of the one gage that's best for you. An early talk with a Federal sales engineer may save you weeks of time and hundreds of dollars.

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**FOR ANYTHING IN MODERN GAGES...**

Dial Indicating, Air, Electric, or Electronic — for Inspecting, Measuring, Sorting, or Machine Size Control.

## Interview

**Q. Is the industry prepared to meet a national emergency?**

**A.** The industry is better prepared than ever before in its history to meet an emergency national defense demand. In any such event, the old pattern of a sudden avalanche of orders far beyond the capacity of immediate fulfillment would no doubt be repeated — but the Korean experience is recent, plant capacity is substantial.

**Q. What can the industry do to eliminate boom or bust cycle?**

**A.** In past years the boom and bust cycle was primarily a war and peace cycle. Today, however, our country regards armament not merely as an emergency problem, but as a continuous program. Instead of machine tool defense orders arriving in emergency batches, they are now being spaced out regularly over the years. This factor alone should help to level off the machine tool curve. Additional factors looking toward stabilization are the prospective change in depreciation provisions, the trend toward product diversification, and the high degree of obsolescence in American plants.

**Q. What has your firm done to improve its market position?**

**A.** Our firm has just announced the introduction of a complete new line of heavy duty saddle-type turret lathes—four different models with new and improved features. The first of these new models is already coming off the assembly floor, and all of them will be in production before the year is over. In addition, we have announced a leasing program.

**Q. Would a tariff cut be a severe blow to the industry?**

**A.** A lowering of tariffs on machine tool imports in the United States would represent a severe threat to some portion of our domestic market. To compete with Europe's lower wage rates we need the protection of a tariff at least as high as it is today.

## What's Behind The Steel Agreement?

**Industry feels it was following, not setting, pattern . . . Believes price is cheap for labor stability . . . McDonald gains stature in steel and labor—By J. B. Delaney.**

There's more to the 1954 steel labor settlement than meets the eye.

A behind-the-scenes look at the negotiations and the factors that influenced union and industry thinking as the talks progressed reveals the following:

(1) Industry bargainers feel they were following, not establishing, a wage-pension-insurance pattern.

(2) The most powerful voices in the industry believe that money is a cheap price to pay for labor stability, other things being equal.

(3) The cooperative attitude of David J. McDonald, President of The United Steel Workers, toward solution of some industry problems has won him the support of those steel companies in a position to establish labor policy. It tipped the scales in his favor at the showdown when he was fighting for terms that would make him a stand-out in the labor leader sweepstakes.

(4) The fact that generous terms of the settlement helped McDonald politically within his own union and as a leader in the national labor movement was a welcome by-product to some industry policy makers and an influence on industry thinking. But it was never a primary consideration in the negotiations from an industry standpoint.

### McDonald Stock Rises

From where Mr. McDonald sat union politics, at this early stage in his presidency of the USW, had never been more important. Rivalry between McDonald and Walter Reuther, President of the CIO and The United Auto Workers, is no secret. McDonald may withdraw his union from the CIO as a result of growing bitterness between the two leaders. He doesn't want the CIO label used in references to his steel union.

In preliminary discussions, steel negotiators took the position that industry economic and marketing conditions could not support significantly higher labor costs and re-

sultant higher prices. They rejected the requested wage increase and offered only modest improvements in pensions and insurance.

### Who Followed Whom?

But as negotiations progressed labor settlements in other industries were shaping a pattern that forced the steel companies to take another look. A national study of wage settlements through mid-June showed that nearly 60 pct were in the range of four to over nine cents an hour. Another 15 pct were worth 10¢ through 12¢ to the workers involved.

Already on record were such settlements as that of Philco Corp. (9½¢), RCA-Victor Div. (9¢), Western Electric (5¢ to 7¢), Western Union (10¢), Pittsburgh Plate Glass (7¢), Western Pennsylvania Motor Carriers Assn. (7½¢), Building Contractors (5¢ to 15¢). In addition General Electric had offered wage increases averaging slightly over 5¢.

Industry negotiators then offered a "package" worth 4½¢ on wages and insurance, plus \$130 monthly pensions. They felt this was a fair offer in line with the national pattern and one that would enable them to hold price increases to a minimum.



"Is there someone else?"

But it was not enough for McDonald. The union rejected it and authorized a strike if the industry failed to boost the ante. This put the steel companies in the position where they could hold firm and risk a strike or give McDonald something he could sell to his members and at the same time raise his stature as a labor leader.

As the contract deadline neared, the industry raised its pension offer to \$140 per month and added 2¢ more to wages. McDonald still wasn't satisfied; he was thinking in terms of 8½¢ on wages. Hours before the contracts expired, the steel companies raised the wage offer to 5¢ and it was all over.

### Price of Peace

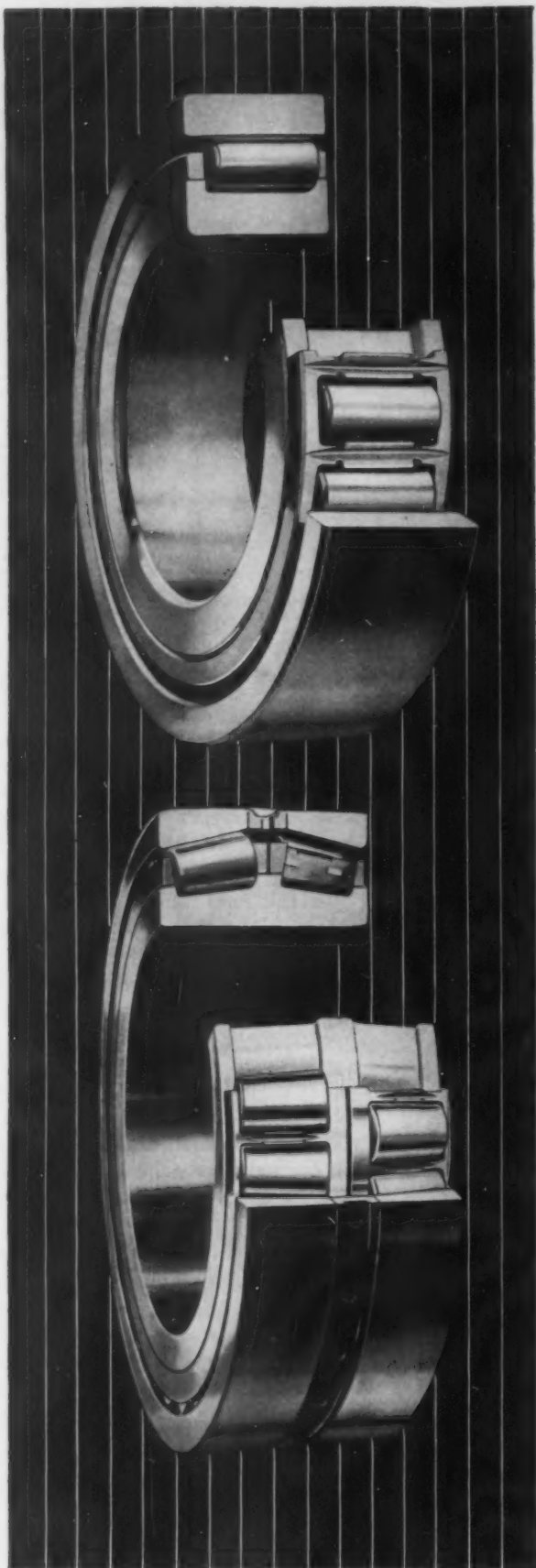
Total cost of the package—10¢ to 12¢ an hour—was higher than most observers had expected. But the industry feels the price was not exorbitant. They point out that after five years, substantial improvements in pensions and insurance were in order.

In the final analysis, prevailing opinion in the industry runs like this: When you're dealing with a labor leader who has demonstrated that he is willing to meet you half way, why undercut him by forcing a settlement that might breed ill-will and unrest. The industry is tired of strikes and name-calling. It wants to build industrial peace, and not for purely unselfish reasons. It believes there's a dollars-and-cents value to labor stability.

McDonald won himself a host of friends in the industry when he took a firm stand last fall against wildcat strikes. He pulled the rug from under an unauthorized walk-out at the Lackawanna plant of Bethlehem Steel Corp. It made an impression on the membership.

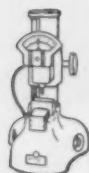
Top-flight steel negotiators view this as only the beginning. They hope that similar progress will be made in the solution of other industry problems.

In this connection, one of the industry proposals not yet agreed upon calls for resumption of regular quarterly meetings at which mutual problems would be ironed out during the term of the contract.



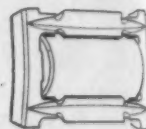
# Here's how **TORRINGTON** Cylindrical and Tapered Roller Bearings ...Cut your costs, increase efficiency

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# TITANIUM: Press for Huge Expansion

**ODM has \$130 million for titanium buying but program won't start yet . . . Senate group urges huge expansion . . . Should U. S. gamble on Kroll replacement?—By N. R. Regeimbal.**

Titanium is added to the government's stockpile list of strategic materials on the heels of a Senate report urging federal action to boost present production to 150,000 tons a year.

Office of Defense Mobilization, which has some \$130 million available for the titanium stockpile program, says it will be several months before the buying program gets underway. As usual, the agency did not announce prices or amounts of its proposed purchases.

ODM will buy any surplus titanium sponge not needed by the Defense Dept. or the Atomic Energy Commission, and will sign guarantee contracts with producers to hike future capacity.

## Could Use 150,000 Tons

The announcement and the report of a Senate subcommittee studying the availability of strategic materials both stress the growing importance of the metal.

Titanium sponge production this year will be about 5000 tons. General Services Administration has signed contracts with producers to increase production by about 18,000 tons a year in the next several years. Other expansion plans will bring the total to about 32,000 tons.

The industry has a \$5 to \$10 billion a year potential, the Senate committee reports.

Military aircraft could now use 150,000 tons a year and more than half a million tons in time of an all-out war, defense officials say.

If the price of the mill products—now at \$20 a pound for sheet—dropped to \$12 a pound, it would replace 75 pct of the stainless steel now being used in aircraft, the committee is told. An Air Force spokesman points out that a 1-lb weight reduction in a jet engine results in from 8 to 10 lb reduction in the weight of an airframe. By using titanium, a saving

of 500 lb in each of eight jet engines would result in a possible reduction of 40,000 lb per heavy bomber.

## Cite Cost Problems

Other uses could be in tanks, mortars, grenade launchers, entrenchment tools and helmets, Defense Dept. says. Reduction of weight without loss of strength in these items could materially enhance the striking power of the Army. Ordnance alone could use up to a million pounds of titanium a year if it were available officials indicate.

Because of its corrosion resistance, the metal would also be in great demand for ships, where its lightness and strength could be used effectively if the price were right.

One major problem of the infant industry is processing. Titanium sponge costs about \$5 per lb but the price jumps to \$20 a pound for rolled or processed forms. Producers hope to cut the \$15 a pound finishing cost at least in half.

Another major problem has been developing satisfactory methods of recovering scrap, to cut waste in processing. Methods have been evolved for reusing commercially pure titanium but some difficulties remain in salvage of highly alloyed forms. Shortage of power in production areas and exchange of information among producers in the highly-competitive industry are other roadblocks to be conquered by this comparatively infant industry.

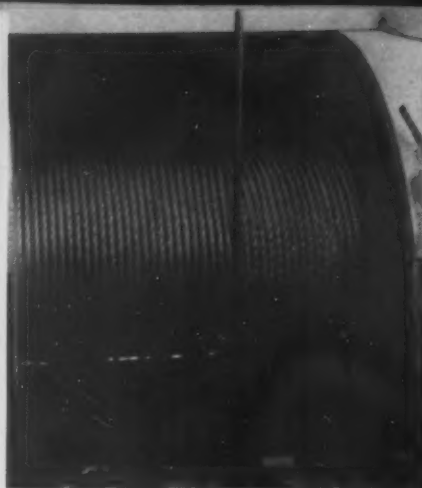
## The Big Question

But probably the biggest stumbling block to an expansion of the magnitude suggested is the current production method. The Kroll process for producing metallic titanium is generally considered impractical. It's too expensive and it's a "batch" rather than a continuous method. And a number of firms are researching new techniques.

Question this poses for the government and the titanium industry is this: Should we now build capacity to 150,000 tons of Kroll-type facilities and risk the possibility that the capital expenses will be lost if a better process is developed soon? Or should we wait for the new process and expand on it, taking the chance that it may not be too slow in coming?

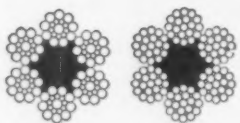


**ON MARKET** after 11 years of experimentation, U.S. Steel's steel swimming pools come in four sizes, have recirculating, purification systems.



ABRASION often gives wire rope a beating. Rope is squeezed under tremendous pressure on rotary drilling drums in Texas oil fields. In the Northwest it drags under heavy logs. In mining it is scraped over rocks to operate slushers. Everywhere it is rubbed severely on winches that do not wind smooth. Under such conditions Red-Strand 6 x 19 Seale wire rope lasts longer and saves money.

## What can you do better with 6 x 19 Seale Red-Strand?



6 x 19 Seale    6 x 19 Filler Wire

6 x 19 Seale has the same strength and weight as the more frequently used 6 x 19 Filler Wire, but the arrangement and size of the wires is different. You can see in the diagrams that the outer wires are fewer in number and larger in size. They provide *high resistance to abrasion* and greater wearing quality with somewhat less flexibility.

It's the perfect rope for certain jobs. Would it solve a problem for you? Be less trouble? Save more money? A Leschen man is near you. Perhaps he can help. Leschen is providing *longer-than-expected* wire rope service to industry everywhere.

Send for the 64-page Leschen Wire Rope Handbook. It describes Seale and all other Red-Strand wire rope constructions.

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## Communications

### Movies:

**Industrial film makers turn to wide screen techniques.**

Despite occasional comment that movies need new stories more than they need new dimensions, the wide screen film continues to expand. Last week it was definite that the technique that made "The Robe" famous was moving into the industrial movie field.

With Bell & Howell's first shipment of anamorphic (wide screen) lenses for use with 16-mm film last week, came word that 90 pct of the "comfortable order backlog" for the new lens comes from producers of industrial films.

Bell & Howell is reported to have had six of the 16-mm wide screen lenses out for field testing prior to June 30, but only a handful of wide screen movies have appeared in the small 16-mm width. Ford Motor Co. produced a wide screen film for dealer and public showings, but the film was shot with a larger lens built for use with 35-mm film and then reduced to the popular 16-mm width for showing to smaller audiences.

Another 16-mm wide screen production was shot for demonstration purposes using another type lens. Film for the wide screen (2.68 times as wide as it is high) showing was made up by Continental Productions.

But at present, Bell & Howell seems literally without competition in the manufacture of small anamorphic lenses for use with 16-mm width film. And probably the first complete industrial movie to be shot with the new lens will be a Good-year Tire & Rubber, Inc., production being produced in Chicago.

The new lens can be used with any standard 16-mm motion picture camera, and judging by response from producers of industrial movies, 1954 will be the year of the wide screen film. A special view finder is required to show the wide field covered by the anamorphic lens, which retails for \$596, and a special projector lens is required. But film and camera are standard, could be used with movie cameras already owned by many plants.

# STEEL: South America Aims Higher

**Symbolical of national strength, maturity, success, steel capacity is being pushed in South America . . . Will buy U. S. equipment . . . Plans outlined—By W. V. Packard.**

Steel production in South America seems destined to get a healthy lift from expansion plans now being vigorously pushed.

National aspirations for home-owned steel facilities are so strong in the Latin American countries that at least some of these expansion plans will be achieved.

Through the years, steel production has become a symbol of national strength, maturity, and success. So the drive for national steel production is not based on economic motives alone. National patriotism and desire for prestige are important, too.

These motivations are no less strong in Latin America today than they were in European countries when their steel industries were established.

Following are short reviews of some of the steel expansion plans of South American countries:

Brazilian National Steel Co. (Volta Redonda) last week said it plans to ask the Export-Import Bank for a \$35-million loan to help raise ingot capacity from its present level of about 782,600 net tons to over 1.2 million tons per year.

Volta Redonda is South America's biggest, most integrated steel mill. Flat-rolled capacity is over 272,000 annual net tons, both hot and cold-finished, including galvanized sheets, black-plate and tinplate. Structural capacity is over 81,500 tons annually, and rails and track supplies, about 70,000 net tons.

Proposed expansion, second round for Volta Redonda, would include a cold mill and a breakdown mill, two openhearth and a new battery of coke ovens. In addition to raising ingot capacity to about 1.2 million

tons, the new equipment would boost flat-rolled capacity to almost 530,000 tons, rails and allied items to over 143,000, and structurals to nearly 107,000. All supplies and equipment would be bought in the U. S.

Blast furnace capacity of over 2400 tons daily is considered adequate to meet demands of the proposed two new openhearth.

In New York last week, General Sylvio Raulino de Oliveira, president of Brazilian National Steel, predicted his country would almost double its annual steel consumption of 2 million tons if domestic capacity were available. At present, he said, Volta Redonda supplies between 40 and 50 pct of Brazil's steel needs. Balance must be imported.

Another important steel expansion in Brazil may be spurred by energetic businessmen of the leading industrial city of Sao Paulo.

Their plan calls for establish-

ment of an integrated steel plant at nearby Piassaguera. Initial capacity would be 300,000 tons, to be built at a cost of \$150 million. If the plan is successful, capacity would be eventually raised to 1 million tons per year.

Enthusiasm of the Sao Paulo industrialists is contagious. Initial requirement of about \$135,000 to finance the studies was quickly subscribed by over 200 businessmen. It is anticipated that most of the capital needs will be taken up locally.

Piassaguera has ready access to the nearby port of Santos, as well as two railroads. It is immediately adjacent to one of the greatest power producing centers of the continent, the Cubatao complex.

Studies are also being made of proposals for steel mills in the Brazilian states of Espirito Santo and Santa Catarina.

The Venezuelan Government is planning to build a steel mill near Puerto Ordaz, at the junction of the Orinoco and Caroni Rivers.

Initially the plant is to have a capacity of 150,000 tons per year. It will cost an estimated \$70 million. It is expected to be operating in 1957.

The Venezuelan Government will hold 51 pct of the stock in the national steel company. German industrialists are also reported interested in the project.

Ore will come from the nearby Cerro Bolivar operations of U. S. Steel Corp. Power will be obtained from a \$40 million hydroelectric plant to be built by the Venezuelan Development Corp.

Junction of the Orinoco and Caroni Rivers may eventually become the "golden triangle" of Venezuela. Also under careful study is a plan to build an aluminum plant in the area. It would, of course, obtain its heavy power requirements from the Caroni Falls development. Bauxite could be brought in by water from British or Dutch Guiana.

Development of the great heartland of Venezuela is







Higher outside stacking was made possible with a Towmotor Model 460

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## Expansion



**General Sylvio Raulino de Oliveira**  
President  
Brazilian National Steel Co.

being speeded by the opening of the lower Orinoco. Steel, power, and aluminum industries could hardly be considered in the region without water transportation. Once these plants are established they will attract manufacturing plants like magnets.

Opening of the Orinoco brings world markets within reach of mineral and forest resources (in addition to iron ore). Rich farm and grazing lands are additional wealth potential that will be unlocked by river transport.

The Argentine government is also determined to erect an integrated steel mill, despite apparent lack of coal and iron ore. Highest bid on the Czech-owned mill impounded by the U. S. Government was for \$9 million dollars submitted by Sociedad Mixta Siderurgia, Buenos Aires, Argentina. Original price of the mill was about \$16 million.

A blast furnace is included in the works which is to be built at San Nicolas. American, French, and German firms are being consulted on the project.

Supplies of ore, coal, and some needed equipment may eventually be obtained through Peron-type barter deals.

In Colombia the National Steel Co. of Paz de Rio will soon start production at its integrated works near Belencito (Belen.) Initially annual capacity of raw steel will be about 150,000 tons. It is being built at a cost of about \$100 million. The plant is expected to fill the bulk of Colombia's needs for rods, simple shapes, nails, and some other wire products.

## Stockpiling:

### Work on new "advance purchase for resale" policy.

The government is entering the fourth phase of its program to prepare the nation's industrial base for possible all-out-war—a determined effort to fill production gaps.

And if the government finds it difficult to increase capacity of certain industries sufficiently because there isn't enough civilian demand to make use of the expanded capacity, it may start stockpiling partly constructed materials and tools. These would be stored and resold to defense producers as needed to keep war production going while new plants were being built.

To aid the Office of Defense Mobilization in cracking bottlenecks in machine tools and other critical defense items, Mobilizer Arthur S. Flemming is setting up a dozen industry committees to review proposals.

#### Four-Step Plan

First step in the long-range program which started in 1951, was a review of industry's war-making capacity and preparation by the Pentagon of a list of 1000 weapons and munitions needed in each of the first 3 years of a war. Next, the list of tanks, planes and munitions was translated into tonnages of metals and estimates of component parts.

Third, the government matched these needs against the country's prospective ability to produce them under wartime conditions while meeting necessary civilian production.

Filling the gaps—the fourth phase—will be accomplished by trying to get industry to build and install additional capacity, on its own or with the use of tax amortization incentives, and where that fails, the use of some government aid.

In cases where there is no civilian use for the expanded production capacity, ODM is considering purchasing partly constructed ma-

terials and tools. These would be stored and resold to defense producers to keep up war production while new plants were being constructed. This program—called "advance purchase for resale"—would be a new concept in the government's stockpile program if put into effect.

Another means of filling the gaps would be direct private loans or long-term contracts with producers to assure them adequate revenue to justify the expansion. What's wanted is a reserve of items such as steam boilers, turbines, and large shapes and forms of steel and other metals for which military demand would skyrocket in time of all-out war.

## Competition:

### Pushing action to get government out of business.

Elimination of the Federal Government's business activities would substantially reduce the national debt and pare federal payrolls, a House Government Operations Committee has been told.

Industry and business spokesmen strongly support a bill that would establish an "anti-government competition" board to drive federal agencies out of business-type activities as a "major step" toward eliminating government competition with private business.

The bill, sponsored by Rep. Os-

mers, R., N. J., would set up a four-man board which would have the power to require detailed reports on government competition from all federal agencies, establish special industry advisory committees, and make recommendations.

Witnesses at recent hearings on the bill estimate that the value of the government's investments in commercial and industrial facilities range from \$25-\$50 billion.

## Approve Delaware Dredging Bill

A bill authorizing the dredging of the Delaware River channel from Philadelphia to Trenton has been approved by the Senate Public Works Committee. Under the bill, the government would pay \$91.3 million and local interests about \$1 million.

The committee recommends a 40-ft channel to Newbold Island—site of the U. S. Steel Fairless Works—and 35 ft from there to Trenton. The bill does not specify whether the additional funds would have to come from industry or the affected states.

Authorization does not mean an immediate start will be made on the project, nor will it guarantee the project will ever be started, since it does not include an appropriation. Usual procedure would call for a partial authorization to get the project underway. This would be included in the Army civil functions appropriation to be introduced next spring.

## Marketing



Edward K. Waldschmidt

## Republic Sets Up New Sales Div.

Republic Steel Corp. has established a new division to coordinate sales of high strength steels. Up until now sales of high strength steels have been handled through several sales divisions.

Edward K. Waldschmidt has been appointed sales manager of the new Hi Strength Steel Div. and will make his headquarters at the company's general offices in Cleveland. Prior to joining Republic he owned and operated an architectural supply company.

## Aircraft:

**Air Force wants quality, speed, not quantity.**

Better combat planes are being sought by the Air Force, which intends to supply supersonic fighters to operational units as soon as possible.

Aircraft designers are being told they must plan for fighter planes with top speeds of 1000 to 1400 mph. The Air Force now considers aircraft which fly 600 to 700 mph as too slow for future aerial warfare. New procurement orders are now being written.

### See Production Cut Coming

In the next 4 months, the air generals will order \$1 billion worth of planes and parts, including an unnamed number of F-100 Super Sabre fighters.

The F-100, reported to have a speed of more than 800 mph, will be going to some tactical units late this year.

Top quality, not numerical strength, is being emphasized by the Air Force in its plane procurement plans, says Assistant Air Force Secretary Roger Lewis.

Last week, Mr. Lewis repeated an earlier forecast that production of aircraft for the Air Force will drop about 2½ years from now to approximately half of the present output of 8000 planes annually. By that time, the buildup to 137 wings is expected to be in its final stages.

Delays in Air Force obligations in the past fiscal year, according to Mr. Lewis, were the result of delays in restudying requirements and in ordering spare parts, among other reasons.

### Stress Pilotless Bomber Defense

Pilotless bombers are being given an increasingly vital role in protection of U. S.-occupied areas. Additional contracts are being let by the Defense Dept.

The Air Force, with two Matarador (jet-propelled missile) squadrons already in operation, is pre-

paring to organize a third at Orlando Air Force Base, Fla. Designated as the 11th Pilotless Bomber Squadron, the new unit will get its firing training at Patrick AFB, Cocoa, Fla., after its initial work at Orlando.

In Germany, where it was sent last March, is the 1st Squadron. The 69th, second to be organized, will leave this country soon for Western Germany.

### Anti-Red Bills Blackjacked

President Eisenhower's antisubversive program received a double setback when the House Judiciary Committee dropped two Communist control bills—one to bar subversives from defense plants and the other permitting liquidation of a Communist-infiltrated organization.

At the same time, however, the committee passed a bill to strip citizenship rights from native-born or naturalized citizens convicted of conspiring to overthrow the Federal Government.

House action is pending on other phases of Attorney General Herbert Brownell's 10-point anti-Communist program.

Judiciary Committee's surprise

pigeonholing of the two bills constituting the heart of the anti-Communist program, was due in part to the opposition of the two major unions, AFL and CIO.

### Seek Bids on Combat Vehicles

Bid proposals are being sought by the army on manufacture of \$266 million worth of combat and tactical vehicles, to be bought in the year beginning June, 1955.

Vehicles to be ordered are Patton M-48 medium tanks, M-59 armored infantry carriers, M-42 twin 40-MM self-propelled gun carriers, and 5-ton cargo trucks. Each of the types named is being produced by a single supplier under contracts running through next May.

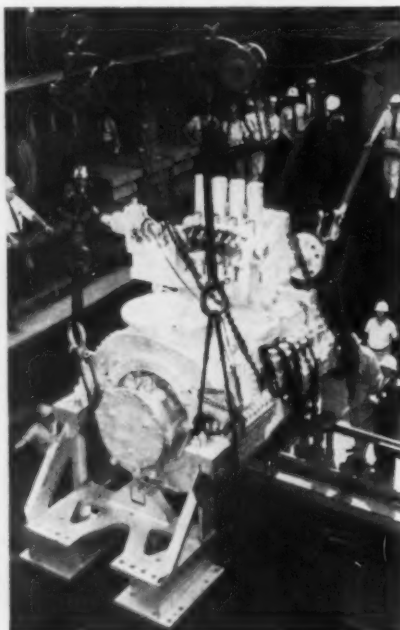
### AEC Holds \$5½ Million Auction

Atomic Energy Commission has approved appointment of two Los Angeles auctioneers, Milton J. Wershow and David Weisz, to conduct a public auction of more than \$5½ million worth of surplus materials at the Atomic Energy Project, Paducah, Ky. The sale has been scheduled for 3 days, starting Aug. 10.

Included in the materials to be auctioned are more than \$3.5 million of unused steel, piping and supplies. There are also more than 1500 lb of unused steel; \$237,133 of monel structurals, pipe and fittings; \$139,534 of stainless steel, valves, fittings, pipe and plant; approximately \$1.858 million in unused pipe and fittings; over \$1 million in miscellaneous machinery, compressors, pumps, hand and precision tools, and \$740,000 of unused replacement parts.

### Work on Sodium-Graphite Reactor

The first sodium-graphite reactor in the United States will be developed and constructed in a joint project of the Atomic Energy Commission and North American Aviation, Inc. AEC Chairman Lewis L. Strauss estimates the experiment will cost about \$10 million, of which the aviation firm will assume up to \$2.5 million.



POWER PACKAGE for the new carrier U.S.S. Saratoga is this one of 4 marine turbines being installed.



# REPORT TO MANAGEMENT..

More than \$50 billion

President Eisenhower's suggested \$50 billion highway modernization program if put into effect will mean much more to business and industry than just another push for the already fast moving construction industry.

You know combined spending by states and the federal government of more than \$5 billion a year on road building can't miss booming the construction industry and its suppliers. But even more important will be its after effects. Watch for the opening up of new markets, reduced transportation costs, faster freight shipments, more advantageous plant location, mushrooming of new communities.

But the timing was off

It was unfortunate announcement of such an important plan was so poorly timed.

The program was outlined by Vice-President Nixon at the annual Governors' Conference only a few hours after that group had criticized the grant-in-aid method the federal government uses to help states finance their roadbuilding programs. For a long time the governors have wanted more state control over highway construction planning and financing.

Result was the Eisenhower road program received a rather chilly reception, though sentiment has warmed slightly since then.

Ike showed a pair

You can also figure that in proposing his \$50 billion highway program, the President was only tipping his hand. He still has several aces he didn't show.

You know that the U. S. not only needs a \$50 billion highway program (and this figure is considerably less than what is really required), it also needs more homes, schools, hospitals, airports, water systems, power projects.

The Administration has plans for almost all of these projects. So you can expect more dramatic announcements of horizon-wide multi-billion dollar public works programs to come from the White House from time to time.

Not New Deal-ing again

Some critics will tag these programs as a return to the New Deal. They aren't. These are not "make work" projects. They will undoubtedly provide employment, boom the economy and make us even more depression-proof than we are at present, but this is not the basic reason for them.

These vast programs will have to be put into effect because the continued rapid growth of our country demands them.

Will construction buckle?

Are you afraid construction activity which has been the economy's mainstay throughout '54 may soon poop out? If you are, you're way off base.

Example: Bethlehem's Eugene Grace figures construction industry has a work backlog amounting to \$75 billion, believes this is enough to keep industry operating at a high level for about 5 years. By that time even greater demands will have developed.

July 22, 1954

REPORT TO MANAGEMENT-REPORT TO MANAGEMENT

# Industrial Briefs

**Exclusive . . .** Beryllium Corp., Reading, Pa., has named J. M. Tull Metal & Supply Co., Inc., Atlanta, its exclusive warehouse distributor for Berylco beryllium copper wrought products in the Southeastern states.

**New Store . . .** National Supply Co. has opened an oil field supply store at Pearsall, Tex., to serve drillers in the area. William Davis is manager.

**Dedicating . . .** Buckeye Tools Corp. is dedicating its new plant and offices at 5035 Springboro Pike, Dayton, on Friday, July 30. Open House will be held on July 31.

**Established . . .** A \$6,000 grant for research in the field of hydraulics and hydraulics machinery has been established at Illinois Institute of Technology, Chicago, by the Giddings and Lewis Machine Tool Co., Fond du Lac, Wis.

**Celebrating . . .** Steel Supply Co., 26 North Aberdeen St., Chicago, is celebrating its 50th Anniversary this year.

**Licensed . . .** Webb Corp., Webb City, Mo., has been licensed to manufacture, sell and distribute the Reed line of welding fixtures and metal forming equipment formerly built by Reed Engineering Co.

**Opens Warehouse . . .** Trebor Steel, Inc., has opened a warehouse on Nichol Ave., McKees Rocks, Pa. The operation will provide general warehouse and steel service.

**In Operation . . .** Inland Steel Co., Chicago, has put into operation a second continuous galvanizing line and retired from service the last of its old-style molten zinc "pots."

**Increased Facilities . . .** Lukens Steel Co., Coatesville, Pa., has increased its heat-treating process facilities and is now heat-treating, quenching and drawing plates up to 60 ft long.

**New Firm . . .** Tyler Steel Corp., 2616 West Central Ave., Toledo, is a newly organized company engaged in warehousing and wholesaling steel products.



**BETTER RELATIONS:** Edward E. Robbins, director, Eastern Region, United States Steel Export Co., last week was named an honorary commander of the British Empire for furthering American and Australian understanding.

**Dealer . . .** Clark Equipment Co. has appointed Highway Machinery & Supply Co., Inc., Richmond, Va., to sell and service the line of fork-lift trucks, straddle carriers and other materials handling equipment manufactured by its Industrial Truck Div.

**Contract Given . . .** Chase Brass & Copper Co. Inc., a subsidiary of Kennecott Copper Corp., has given the contract for an addition to its Cleveland Mill to Gillmore-Olsen Co., Cleveland.

**Hear Ye . . .** Aluminum Co. of America has published a book for cost-conscious truck operators describing extensive cost saving experiences with aluminum truck bodies. The book, *Profitable Trucking*, provides a comprehensive description of the savings realized by over 30 companies using aluminum truck bodies.

**Erected . . .** Permatex Co., Inc., Brooklyn, has completed steel erection and processing equipment which is being installed for a chemical plant under construction on a 6-acre tract in the Fairfax industrial area in Kansas City.

**Visitor . . .** Alton Works of Laclede Steel Co., St. Louis, was visited by Karl H. Huenerbein, appraiser and valuator of plant properties and equipment for the Commonwealth of Australia, in his recent round-the-world tour of outstanding industrial plants.

**Price Changes . . .** U. S. Steel Products Div., U. S. Steel Corp. has established new prices on its line of steel drums and pails. The revisions represent increases ranging from approximately 3 to 4 pct on drums and approximately 6 pct on pails.

**Jet Planes . . .** Ryan Aeronautical Co. has received a \$3.5 million contract for an undisclosed quantity of Ryan Firebee pilotless jet planes from the Air Force.

**Going Up . . .** Chicago Bridge & Iron Co. is constructing a new steel and sheet metal building at its Birmingham plant for the manufacture of a newly developed product called Hortonclad.

**Gets Trophy . . .** Trailmobile Inc. presented Gomer W. Bailey of Denver, with its "National Driver of the Year" trophy.



## PRODUCTION PROBLEM?

if you use flat-rolled steel  
talk to a specialist

**PROBLEM** With present designs and manufacturing facilities, the auto industry needs wide coils of sheet steel with a minimum number of welds. These welds must be cut out before steel goes into the big presses—a costly, time-consuming process.

**SOLUTION** As a prime supplier to the automotive and other industries, Great Lakes Steel has developed facilities which now produce wide coils of steel in greater lengths . . . drastically reducing the number of expensive welds in each coil. Result: important fabrication savings for our customers.

**MORAL** Whether you make autos, appliances, or farm machinery . . . if it's flat-rolled steel, you can't lose by talking to Great Lakes Steel—specialists in flat-rolled production and application for 25 years.

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July 22, 1954



# The Automotive Assembly Line

## Army Research Improves Vehicles

**Automakers and Ordnance officers pool talent, know-how at Detroit arsenal . . . Research programs bring better tanks, trucks . . . Standardise to cut costs—By R. D. Raddant.**

A \$20 million Engineering Laboratories Div. is helping Army Ordnance gain and maintain leadership in military vehicle development and production.

The new facilities at the Detroit Arsenal can be compared with the central engineering and research section of a typical automotive company. It brings together in one section all the engineering and development work for all wheeled and tracked vehicles of the Army.

K. T. Keller, chairman of the board of Chrysler Corp., headed a civilian committee of automotive engineering executives that created the overall plan, working with a companion committee of military and civilian engineers of the Ordnance Corp.

**Has Many Labs . . .** Housed in four wings of the engineering and laboratory building are the eight sections of the center. They include the materials laboratory, instrument laboratory, electrical laboratory, rubber laboratory, graphic production branch, mechanical laboratory, experimental division, and model pattern branch.

Except that the parts under test and development are those of tanks, heavy vehicles, amphibious vehicles or others of a military nature, the appearance of the laboratories is very similar to that of any auto research section.

Its objective is to get the best possible result from the small part of the military appropriation that is allotted for research.

**Spend 2¢ On Research . . .** Frank D. Newbury, assistant secretary of defense (applications engineer-

ing), pointed out that of each \$1 appropriated by Congress for the combined research, design development, and production funds, only 2¢ are spent for basic and supporting research, 13¢ for design development of weapons and equipment, and the remaining 85¢ for actual production.

Ordnance Dept. has delegated the responsibility for all of its automotive research and development with respect to automotive equipment, both wheeled and tracked, to the Detroit Arsenal. This points out the broad importance of the new laboratory in the military vehicle picture.

**Meet Tomorrow's Emergencies . . .** Most of the work is concentrated on vehicles for possible future emergencies. They must be designed for all possible types of terrain and climatic conditions.

A basic philosophy of Ordnance is what is called the "family of vehicles," which refers to standardization of parts and mechanisms such as engines, transmissions, steering mechanisms, suspensions, tracks, hydraulic



"Our new model isn't priced out of the market . . . plenty of people like to pretend that they have money."

### Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
July 17, 1954 . . .	117,217*	19,916*
July 10, 1954 . . .	90,223	15,846
July 18, 1953 . . .	146,208	29,391
July, 11, 1953 . . .	142,112	25,448

\*Estimated. Source: Ward's Reports

systems, electrical systems and many others.

**Share Common Parts . . .** A significant example is that in 1944, 5 different engines requiring 4310 different engine spare parts were used for one specific medium tank. Today, one specific engine requiring only 1320 different engine spare parts is used for 6 different vehicles.

Tool duplication is another point where research and development show terrific savings through the "family of vehicles" system. Under the old system, one Ordnance maintenance company required 3124 tools to serve 17 vehicles. Today it can be done with 312 tools, resulting in a savings of \$177,664 in tool costs for one company and a weight savings of 16,600 lb.

This gives an idea of what can be done in research and development, not only in design of new vehicles, but in unifying the overall picture.

**Credit Auto Industry . . .** Mr. Newbury gave full credit to private industry for its part.

"The location of these new laboratories, in fact the existence of the laboratories themselves, is tangible evidence of a policy of the Dept. of Defense that I wish to stress," he stated.

"This is a policy of close cooperation with and use of the experience and facilities of private industry, generally, and, in this instance, of the automotive industry. The excellence of our

weapons and defense of our country depend, in the last analysis, on the strength, the skill, and the productive capacity of American industry."

## Brakes:

**Disk design may solve tough problems.**

A new disk brake, called the Ausco and spelled disc in its copyrighted name of Double Disc Brakes, has been developed by the Auto Specialties Mfg. Co.

Although it has not been adopted by any major automotive company as original equipment, it presents probably the first real challenge to the conventional drum brake. Many authorities believe that the development potential of the drum brake has just about been exhausted and that something new will have to be developed if cars keep gaining weight and developing greater inertia.

The disk brake may not be the answer, but its development indicates that approaches other than the brake drum are being tried by automotive engineers.

### Need No Power Aids

The Ausco brake consists of two power actuating disks, back to back. These disks have lining bonded to their outer surfaces. Between the double disks are six steel balls in "ramps." When the brake is hydraulically actuated by an annular piston, the disks are forced apart and against the braking surfaces of the housings. This causes the balls in the "ball and ramp" mechanism to roll up the ramps, creating self-energization.

Because the momentum of the car forces the balls against the ramps, in turn forcing the disks against the housings, it is called self-powered braking, eliminating the need for power brakes.

Since they are under test by major auto companies, the next few months will tell whether or not they fill the bill.

## Diversification:

**Studebaker-Packard look for new outlets, savings.**

As Packard and Studebaker set about pointing out to their stockholders the desirability of forming the Studebaker-Packard Corp., some of the pattern the proposed company will follow began to emerge.

Most significant in some ways was the acknowledgment of the possibility of diversification which other large corporations, both automotive and non-automotive, have found so successful in broadening operations.

Packard's proxy statement, in fact, contained this broad hint: "It is believed that Studebaker-Packard, because of its combined financial and other resources, would be in a better position to diversify its products in various ways, including the acquisition of other businesses."

The logical assumption is the appliance business, largely be-

cause James J. Nance, Packard president and choice for S-P president and executive officer, was president of Hotpoint before going into the automotive business.

### Seek Parts Maker

However, this speculation on appliances is the easy conclusion to reach. More likely diversification would take the form of automotive parts through, for example, the acquisition of a company like Electric Auto-Lite which is already established and has a broad base of operations.

The proxy also points to "substantial direct cost savings" through integration of facilities, unification of management and standardization of parts. It points to the possible utilization of Studebaker's California facilities as Packard assembly as well or the adaptation of Studebaker's New Brunswick, N. J., for automotive work. It points to lower unit cost of both lines of cars through reduced tooling costs on new designs.

## THE BULL OF THE WOODS

By J. R. Williams



LIFE'S LONGEST MINUTE

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RLM 408



## Seek New Approach to Plant Dispersal

Defense planners want more effective way to get industry to leave heavily built-up areas . . . Will tackle problem on industry-by-industry basis—By G. H. Baker.

Federal planners fret anew over ways to force the dispersal of industry from heavily built-up areas. They're not satisfied that existing methods (such as denial of fast-amortization certificates to firms that won't disperse) are effective enough. As a result, new ways of encouraging industry to scatter are under discussion in closed sessions here between industry and government officials.

Office of Defense Mobilization is calling on the key federal agencies to name the defense production areas they consider to be "excessively concentrated" and in "vulnerable locations."

Essentially, the problem of forcing dispersal is one to be worked out on an industry-by-industry basis, the planners have found.

No good can be accomplished, they've discovered, by throwing out a general order to disperse into huge areas like metropolitan Cleveland, or the greater Chicago area, for example. Answer to the problem is to work with the responsible executives within each affected industry.

Broadly, the pattern is to plot the out-of-town move to all manufacturers in the "vital defense work" category. Less-than-vital and civilian-type production then is to be booked into the vacated plants in concentrated areas.

**Fight European Orders . . .** Basic revision of the federal rules that govern purchase of goods for European rearmament may be in the works soon.

Irked by the continued flow of orders for manufactured products like locomotives and freight cars to European manufacturers when some U. S. shops are desperate for

orders and unemployment is high, some newly-organized labor-management teams are pushing their case with Cabinet officials and congressmen.

There's growing agreement among a number of President Eisenhower's industry advisors that the time is probably at hand for a reappraisal of the existing policy. As a result, the State Dept. emphasis on ordering rearmament goods in Europe may be sharply curtailed.

Reversal won't come easily, however. State Dept. leans to the idea that economic prosperity in Western Europe is keyed directly to anti-Red resistance. The two go together, it is argued.

**Need Storage Bins . . .** This year's bumper crops in corn and other feed grains are forcing the government to order more storage bins from fabricating firms.

At the U. S. Department of Agriculture, it is estimated that enough new bins to accommodate as much as 60 million bu of grain will be needed soon.

Unexpectedly large crops—which



## Tin Smelter's Still Going

Continued operation of the government-owned tin smelter at Texas City, Tex., won congressional approval as the Senate agreed to a House provision that tin produced at the plant may be added to the national stockpile if necessary.

Resolution will continue the smelter's operation through Apr. 30, 1955, while special congressional committees study the country's tin needs and the smelter operation.

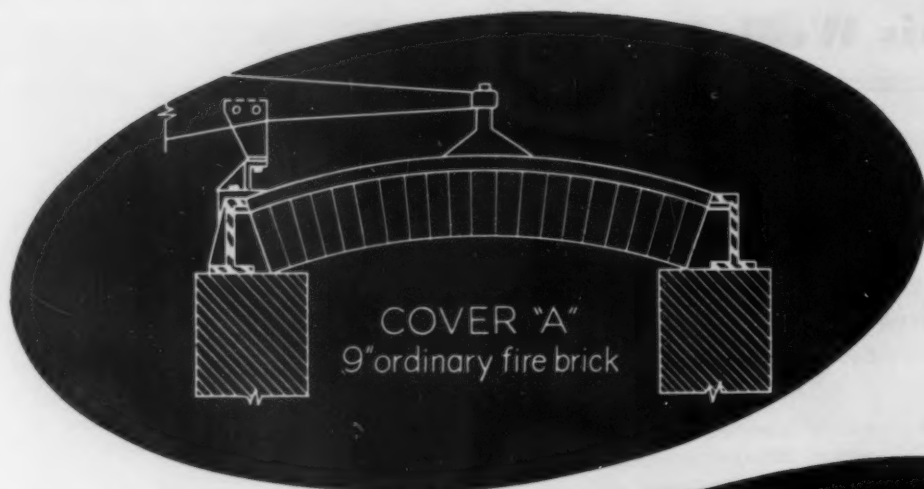
even surprised government planting experts—are expected in corn, oats, and barley. Storage problem is aggravated by the fact that bin space already is insufficient, limited not so much by the inability of metal bin manufacturers to keep up with demand, but the slowness of government storage officials to place orders.

Market for bins may be anticipated this year in areas which normally are not storage areas. For example, some areas of Maine that normally produce little if any feed grain are anticipating jumbo crops. And storage space in the corn belt, already far behind demand, is getting to be an increasingly acute problem.

**Cut Tool Needs . . .** Pentagon tool-buyers aren't too happy about the trimmed-down fund (\$100 million) voted by Congress for procurement of machinery this year. They will make the best of it, naturally, but officials within the Army, Navy, and Air Force are complaining that they are now severely limited during this fiscal year as to the number of projects and the size of the individual projects that they can undertake.

They are now revising their earlier plans, trimming here and there, to fit the huge program to the smaller purse handed them by the Congress.

The Army, Navy, and Air Force



**Soaking pit cover**  
operating temperature:  
2250° F. to 2600° F.



## Which soaking pit cover cuts heat loss by 63%?

The refractories used in soaking pit covers have to stand up under heavy mechanical and thermal shock. If they also can provide efficient heat control, operating savings can be effected. The problem has been finding a refractory rugged enough for the job, yet with the insulation value needed to cut down heat losses.

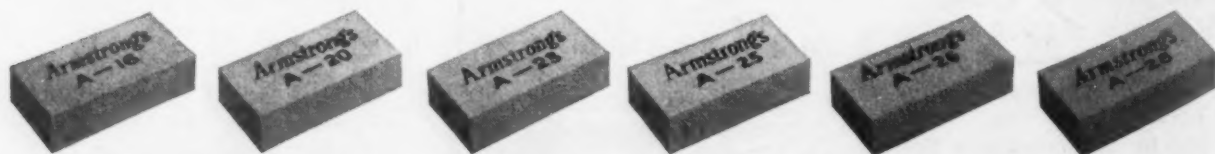
Cover "A" above is built with 9" of heavy-duty fire clay brick. This construction is durable, but heat loss is high—2,156 Btu's per square foot per hour. Heat storage is 37,325 Btu's per square foot.

When the fire clay brick are replaced with 9" of Armstrong's A-28 Insulating Fire Brick, see what happens. Heat loss is slashed by 63% to only 790 Btu's per square foot per hour. That results in big fuel savings and more economical soaking pit operation. These rugged insu-

lating brick have ample strength to stand up under the vibration, mechanical abuse, and thermal shock encountered in soaking pit cover operation. They also cut heat storage to 14,820 Btu's, which means faster heat up. And their light weight makes the big covers easier to move into position.

### Do you have a furnace job?

Before you start your next furnace construction or relining job, check the specifications with your Armstrong engineer. His expert knowledge of brick performance and furnace construction can be a great help to you. Just call your nearest Armstrong office or write Armstrong Cork Company, 2707 Susquehanna Street, Lancaster, Pennsylvania.



## ARMSTRONG'S INSULATING REFRACTORIES

together submitted to the Secretary of Defense a list of proposed tool purchases requiring expenditures of about \$500 million. This total is "out of sight" for this year, of course.

Of the long lead-time projects, probably each service now can afford only one big project—say about \$35 million apiece. Long-range projects are to be spread out over a period of several years, and the Defense Dept. is planning to go before Congress next year and ask for additional money to finish the projects under way.

## Building:

**Record starts pace hot hardware, materials markets.**

Continued expansion of markets for building equipment, hardware, home fix-up materials, and household appliances is assured for months to come by the booming building industry. Latest government figures show construction hit a new high in June, with all types sharing in the increase.

U. S. Commerce and Labor Depts. estimate that more than \$3.3 billion worth of building was started last month, bringing the total for the first half of 1954 to \$16.6 billion, 2 pct above last year.

### Cut Inventories

These figures support estimates that more than \$36 billion worth of construction will be started this year.

Other new business statistics reveal that hardware, lumber, and building materials dealers reduced goods in stock by \$2 billion since last September. This declining inventory-sales ratio indicates the dealers are doing well. At the same time, inventories of finished goods on hand at manufacturing plants are declining, leading some economists to predict that this phase of the recession is ending.

June figures show that in jumping 7 pct over May, private building totaled \$2.2 billion and public

construction amounted to \$1.1 billion.

Declining federal spending for military facilities was offset by higher state and local government outlays.

Economists predict that total hardware and lumber sales, now at a \$9.6 billion annual rate, will rise by \$300 million in 1955.

## Taxes:

**Agree on Senate's more liberal depreciation formula.**

Business has won a major victory in the Senate-House discussions over the omnibus tax revision bill as conferees agree to the Senate formula for liberalizing depreciation.

The measure permits taxpayers to deduct about two-thirds of the cost of an asset in the first half of its life, compared with a deduction of only half the cost in that period under present "straight line" methods.

### Allows Other Systems

Desirable features of the Senate measure also permit taxpayers to switch to straight line depreciation from the declining balance method at any time and further specifically authorize a complicated depreciation system known as the "sum of the years' digits" method.

The measure also permits any other depreciation system as long as it is systematic and doesn't exceed the total allowances under the declining balance method.

Conferees have accepted the Senate provision that new methods

could apply to the entire cost of construction begun before Jan. 1, 1954, if completed and put to use after Dec. 31, 1953. The House bill would have required taxpayers to prorate construction actually carried on after Jan. 1, 1954.

## NLRB:

**Cuts its jurisdiction . . .  
Drops two cases.**

National Labor Relations Board has completed the job of setting up new policy rules by removing itself as arbiter of labor disputes involving small firms, including some defense plants.

New rules go into effect immediately, and will apply to cases now before the Board. Curtailed will be NLRB's jurisdiction over disputes in the smaller defense industries, utilities, manufacturing and service industries, retail stores, newspapers, radio and television stations and transit companies.

Basis for the change was the conviction of the Republican members that the quasi-judicial agency should stop hearing "insignificant disputes" and concentrate on those which will set a precedent.

### Dropped Cases

Under this new policy, NLRB recently dismissed pending cases involving unfair labor practice charges against two firms holding franchises from interstate companies but doing business solely within their home states.

One of the first affected is Pres-To Log Distributors of Calif., Inc., located in Albany, Calif., a manufacturer of synthetic fireplace logs. The other is an unnamed automobile sales agency franchised by a national automaker.

Originally, NLRB took jurisdiction over both cases solely because of the franchise angle. Last year, neither firm brought in enough out-of-state merchandise to come within any other NLRB standards.

The Pres-To Log firm was charged with illegal refusal to bargain and with unlawful firing of five employees because of their union activities.

## Wanted: 150,000 Apprentices

Apprenticeship training must be broadened to keep worker skills at a high level, U. S. Labor Dept. says. The Department finds only 100,000 workers with this training are ready to replace 250,000 craftsmen each year. Many of the remaining 150,000 replacements merely "pick up" their knowledge of the trades.





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## West Coast Report

### Tinplate Demand Outruns Supply

**Coast states and Hawaii now use 20 pct of U.S. tinplate . . . Kaiser, U.S. Steel can't meet demand . . . Brewers, canners have moved in, upped production—By T. M. Rohan.**

The West Coast tinplate market this year will top the million ton mark for the first time in history, it appeared last week.

Yet the two producers, U. S. Steel and Kaiser, who have spent over \$65 million in the last 6 years on sheet and tinplate facilities are still filling less than half the needs of the fast-expanding market. More than half still comes in from the Midwest and East. The largest single mill supplying the West is probably Weirton in West Virginia.

**Need Beer Cans . . .** Tinplate consumption in the West and Hawaii this year will hit slightly over 1 million tons, principally due to a late push for the host of breweries moving to California. Although the 100,000 tons for beer cans is a relatively small amount, it is the biggest increase percentage-wise of any market category. The 1 million tons of tinplate going to the West and Hawaii represents over 20 pct of the national market, this year expected to hit about 4.8 million tons from about 5 million last year. The West's advance, therefore, has been in the face of a decline nationally. In its own area also, the tinplate increase, while modest, is in the face of an expected 15-18 pct decline in all other steel products expected this year—making it a prime depression-proof product in the West.

**U. S. Steel Biggest . . .** Total West Coast and Hawaiian consumption last year was about 990,000 tons and in 1952 about 870,000, indicating a steady rise. The 2 western producers, U. S. Steel at Pittsburg, Calif., and

Kaiser at Fontana will probably turn out about 435,000 tons this year or 43 pct of the area supply. This leaves about 565,000 tons deficit which comes in from Weirton, U. S. Steel's other mills (which together make it the largest supplier), Bethlehem, Jones & Laughlin, Wheeling, Youngstown Sheet & Tube, Republic and Crown Cork & Seal.

The beer can tonnage probably represents almost 100,000 tons this year, largest percentage increase of any product in the area. Western tonnage increase has been brought about by movement to California in past few years of Schlitz, Anheuser-Busch, Pabst, Goebels, Hamms and Rheingold beer. Heaviest capacity has gone to Southern California, counterbalancing Northern California predominance for fruit and vegetable canning. Canned soda pop tonnage remains relatively small, but potential is tremendous.



"And remember there'll be quick promotion for men with initiative."

**Started In 1948 . . .** Western tinplate production on modern mills dates to U. S. Steel's \$25 million expansion of the Pittsburg, Calif., mill in 1948. This was practically doubled in 1952 with \$30 million sheet and tinplate mill expansion, raising total capacity to over 500,000 tons annually. The same year Kaiser started its tinplate mill.

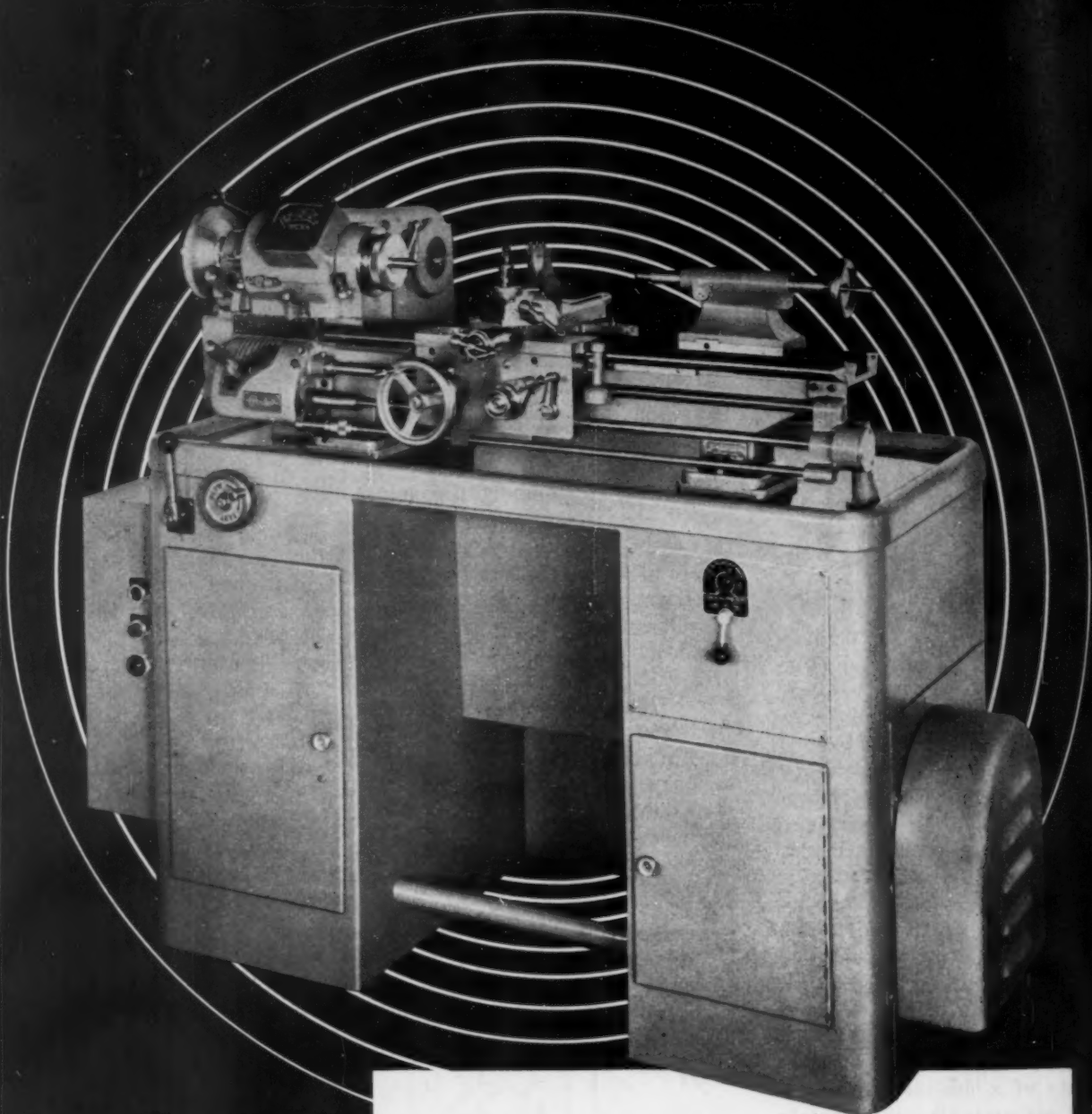
Kaiser has announced a new \$2 million mill alteration for flat rolled products intended to increase production of plate and tinplate. Amperage will be increased on the electrolytic line and coilers installed with shearing made a separate operation. No plans have been announced for U. S. Steel at Pittsburg, but with continued drop in hot-dip tinplate and expansion of demand for the electrolytic product similar mill alterations are probable.

**Weirton Started Early . . .** The emergence of Weirton as a major factor in the West Coast market dates to its being an earlier supplier of Pacific Can Co. of San Francisco. This firm started in 1927 against heavy competition from American and Continental and by 1950 had \$14 million sales. In 1951 sales were \$24 million, in 1953 over \$32 million and this year are expected to go considerably higher. The firm has 6 plants in California plus a new \$1 million unit being built in Denver, to a large extent for soda water cans. Well over 10 pct of incoming orders now are for soda cans introduced only last fall. Some weeks ago, another major can maker, National, indicated plans for Coast operation.

Thus the continued expansion of the western market for tinplate is assured by population growth and expanding local markets for beer, canned pop and other general tin products. But it seems reasonable to expect that the steel industry is looking very carefully at this profitable market.

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# Machine Tool High Spots

## When Is a Machine Tool Too Old?

**Obsolescence depends on type of work required . . . Mass producers need late models . . . Small shops keep older tools going with ingenuity, attachments—By E. J. Egan, Jr.**

When does a machine tool become obsolete? Is it after 10 years, 20 or 30?

Most builders are inclined to believe a machine tool has outlived its usefulness after about 10 years. Mass production manufacturers are more inclined to go along with this view than small to medium-size producers who will hold on to a machine for a much longer period.

Who's right? Answer depends primarily on the kind and amount of work a machine tool is required to do.

Where metal parts are produced by the millions, and potential savings in fractions of seconds and pennies are extremely important, late model machinery is a must.

But many small metalworking plants swear by their older machines. Often the equipment is used only a fraction of the time but it is easily capable of turning out its quota of work to required tolerances. Many of these shops see no reason to get a faster machine that will just remain idle for long periods.

**Some Stress Quality . . .** Even many large, well-known firms in the metalworking industry are still concerned primarily with quality rather than quantity. Their greatest tribute to the machine tool builder is their willingness to use the sturdy, accurate equipment built for them 20 years ago.

During a plant tour recently, for example, the works manager of a leading automotive specialty plant expressed extreme pride in several World War I machine tools that are still in the plant. They are used only part of the time but nevertheless do the job

that is required of them every day.

**Where Statistics Fail . . .** One of the bugaboos in statistical surveys of machine tool obsolescence is that they fail to show the number of older machines that have been upgraded in productive capacity through use of new attachments or by the ingenuity of one of the workers in a plant.

Producers of basic metalworking equipment are surrounded by hundreds of small, satellite companies. These tiny firms are the source of numerous machine attachments, devices and conversion units. Each is designed to make a standard machine tool capable of turning out more work, usually with equal or greater precision than it originally had.

Inevitably some of these firms fade out of the picture through lack of product quality or failure of inexperienced management to survive small business hazards. But new ideas and new companies keep appearing on the scene to put new life in old machine tools.

**In-plant Ingenuity . . .** The all-around mechanic who prefers not



"That new man is great. I haven't even assigned him a lathe yet."

to go into business for himself frequently can write his own ticket in an alert metalworking plant. Given an air compressor, some pneumatic and hydraulic components, a couple of motors, pieces of angle iron and a few other off-the-shelf items, he can build or convert a machine tool to do a necessary job.

Examples of this in-plant ingenuity are quite common. The foreman of a steel mill billet grinding department designed and supervised the building of a special, automatic grinding machine. The job wasn't farmed out; it was done right at the mill. And when the machine performed beyond expectations, a patent was applied for.

In a brass forging plant, a young machine operator converted an antiquated press into a drilling and facing machine to handle thousands of small parts daily. Production gain amounted to several hundred pct with no sacrifice of part accuracy. The converted machine is completely automatic, hopper fed, and requires a minimum of attention.

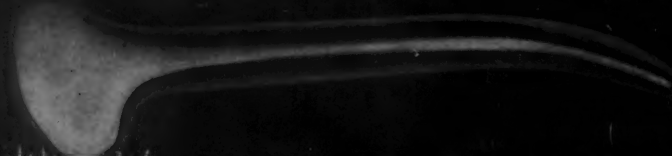
Manufacturers of compressed air and hydraulic devices aren't passing up any sales opportunities. They're driving for all the business they can get from machine tool builders, and simultaneously cultivating a "do-it-yourself" trend in metalworking plants.

**Hard Sell in Italy . . .** The 1954 European Machine Tool Show to be held at Milan, Italy, in September will give American builders an opportunity to sharpen demonstration techniques, possibly sell enough equipment overseas to help offset lagging domestic sales.

Latest models are being painted, polished and crated for a hoped-for one-way voyage. Experienced sales-demonstration teams will go along to match skills with the extremely aggressive European machine tool industry.



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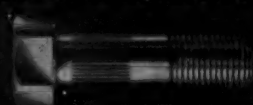


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# The Iron Age

## SALUTES

*Dr. Edwin O. Barstow*

His keen intelligence, years of persistent effort pioneered new worlds in metallurgical science.



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In the 54 years that followed, E. O. has more than anyone been responsible for the joint growth and development of Dow Chemical and the magnesium industry.

As E. O. became successively Dow's production manager, a director and in 1941 a vice-president, he made a score of important contributions to both the theory and practice of industrial chemistry.

In 1916, however, E. O. began the pioneering developments which led some 20 years later to the Dow electrolytic process that made possible the large scale production of magnesium.

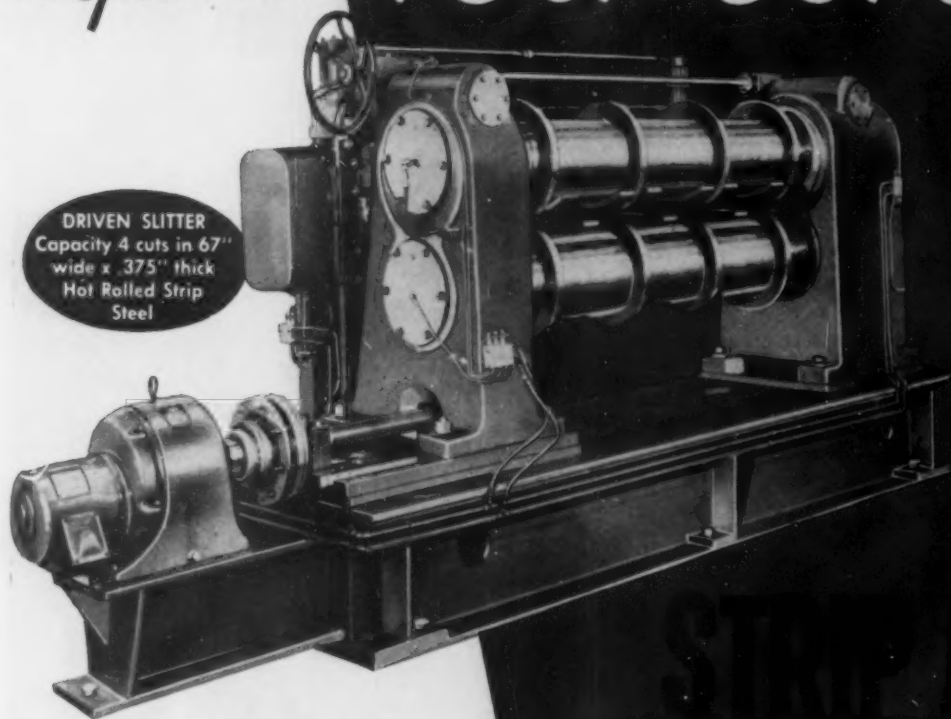
Due principally to his efforts in designing Dow's original salt-water magnesium plant at Freeport, Tex., U. S. magnesium output met World War II aircraft needs.

E. O. has been as active in civic affairs of his home town of Midland, Mich., as in the chemical industry. He was a charter member of the city's planning commission from 1925 to 1950; chief sponsor of the Midland Community Center, now constructing a \$1 million building. In addition he was one of the originators, and for 5 years a director of the community fund.



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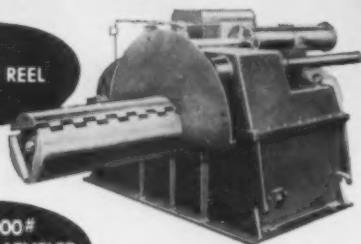


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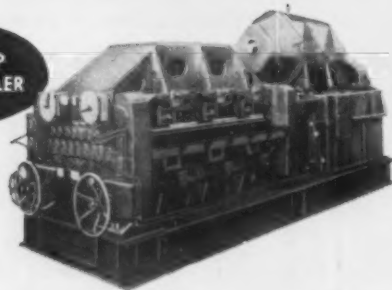
TAKE UP REEL



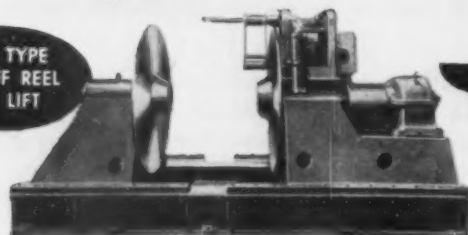
1,000,000#  
STRETCHER LEVELER  
90" x 240" x 1/4" thick



BACKED UP  
ROLLER LEVELER



CONE TYPE  
PAY OFF REEL  
WITH LIFT



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- CONTINUOUS PICKING LINES
- SHEET SCRUBBER LINES
- COILER LEVELERS • STRETCHER LEVELERS
- BRUSHING MACHINES • OILING MACHINES
- PAY OFF REELS • TAKE UP REELS
- UP CUT SHEARS • UP COILERS
- UNCOILERS • OIL CARRIAGES
- UP ENDERS • DOWN ENDERS
- EDGING MILLS • TABLES
- CLASSIFIERS & PILEDS
- CRAB ROLLERS

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The Youngstown Foundry & Machine Co.

SERVING INDUSTRY SINCE 1885

Youngstown, Ohio

# The Iron Age

## INTRODUCES

Clarence J. Klein, elected vice-president in charge of engineering, National Steel Corp., Pittsburgh.

C. Howard George, elected executive vice-president, The New Jersey Zinc Co.

James B. Austin, appointed to assistant vice-president, Fundamental Research, U. S. Steel Corp., Pittsburgh; Max W. Lightner named assistant vice-president, Applied Research and Development; and Robert W. Holman, named assistant vice-president, Operations Research.

J. W. McMullen, promoted to vice-president in charge of engineering, Lombard Corp., Youngstown.

John W. Darr, appointed director of public relations and advertising, ACF Industries, Inc.

Howard H. Casey, appointed director of engineering, The Midvale Co.

Leon H. Nelson, appointed director of conservation and yield control, Crucible Steel Co. of America.

Marsden Thompson, appointed director, customer research section, General Motors Corp.

E. B. Hill, appointed director of sales, Gar Wood Industries, Wayne, Mich.

Douglas S. Brown, appointed assistant controller, Fruehauf Trailer Co.

V. Y. Tallberg, appointed director-engineering administration and executive assistant to vice-president-engineering, Ford Motor Co., Dearborn.

Clyde E. Hopping, elected chairman of the board, The Alhambra Foundry Co., Ltd.; and J. Stanley Ashton, elected president.

Frazier O. Stratton, named chief engineer, Sterling Engineering Co., subsidiary of American Machine & Foundry Co., Laconia, N. H.

W. R. Sutton, becomes carbide service engineer, Detroit, Firth Sterling Inc.; J. F. Kroeger, named carbide service engineer, Los Angeles; and J. J. Journeycake, becomes carbide service engineer, Houston district.

Earl Painter, appointed sales engineer, Chicago branch, Inland Steel Products Co.

William E. Grover, appointed chief erection engineer, Surface Combustion Corp., Toledo.

Arthur Tauscher, appointed plant engineer in charge of maintenance and construction, The Cooper Alloy Foundry Co., Hillside, N. J.

Thomas L. Griffith, appointed manager of Materials Handling Sales, Pittsburgh Steel Products Co.; Raymond Cox, appointed material handling engineer, Columbus; Charles Meyer, appointed sales representative, Louisville district.



WILLIAM IRRGANG, elected president and general manager The Lincoln Electric Co., Cleveland.



ADAM QUICK, elected vice-president — Production, The Black & Decker Mfg. Co., Towson, Md.



RUSSELL T. DRENNAN, named general sales manager, Kaiser Chemicals Div., Kaiser Aluminum & Chemical Corp.

## Personnel

**Robert L. Boggs**, appointed sales engineer, Butterfield Div., **Union Twist Drill Co.**, Derby Line, Vt.

**Howard E. Dykeman**, named chief engineer, Mellon-Stuart Co., Pittsburgh.

**E. T. Walton**, named metallurgical engineer, Crucible Steel Company of America, Pittsburgh.

**Frank N. Long**, named superintendent, Zincgrip, Dept., **Armco Steel Corp.**, Ashland Works.

**Neal L. Cobb**, appointed chief engineer, **The Fellows Gear Shaper Co.**, Springfield, Vt.

**J. Harry Horstmann**, becomes head of a new steel department at Union, N. J. steel warehouse of **Solar Steel Corp.**

**Richard J. Rand**, appointed manager, Crucible Steel Company of America, Cincinnati branch sales office.

**Joseph C. Henry, Jr.**, becomes superintendent, Refractories and Fuel Dept., **Lukens Steel Co.**, Coatesville, Pa.

**R. F. Edgar**, named head of new regional Chicago offices, **Warner Electric Brake & Clutch Co.**, Beloit, Wis.

**George Saum**, appointed manager, Taylor Forge Aircraft Products Div., **Taylor Forge & Pipe Works**, Chicago.

**P. L. Coddington**, appointed manager, Alloy Tube Div., **Carpenter Steel Co.**, Union, N. J.

**L. B. Gay**, appointed manager, Denver District, **Allis-Chalmers Mfg. Co.**, General Machinery Div.

**G. W. Holton**, appointed branch manager, **Westinghouse Electric Corp.**, Akron, Ohio.

**Lester M. Cole**, appointed general sales manager, Cleveland office, **The Warner & Swasey Co.**



**ARTHUR C. BRYAN**, appointed vice-president and general manager, Consumer Products, **National Carbon Co.**, a division of Union Carbide and Carbon Corp.



**WILLIAM H. FEATHERS**, becomes vice-president and general manager of industrial products, **National Carbon Co.**, a division of Union Carbide and Carbon Corp.



**JOHN W. McALLISTER**, appointed administrative assistant to the president, **The Colorado Fuel and Iron Corp.**, New York.



**WALTER A. STEINER**, appointed vice-president in charge of development, **National Carbon Co.**

## ACROSS THE NATION....

### BART LECTRO-CLAD

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Give Permanent Corrosion  
Protection at LOW COST!

Hundreds of firms, including pulp and paper, petroleum, chemical processing and other industries have solved critical contamination and corrosion problems, with **BART LECTRO-CLAD**.

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Operator removing completed ceiling diffuser ring from Farquhar Hydraulic Press at Tuttle & Bailey, Inc., New Britain, Conn.



**Tuttle & Bailey reports:**

## **FARQUHAR HYDRAULIC PRESS Makes New Product Possible**

Tuttle & Bailey, Inc., New Britain, Conn., produces heating convectors, ceiling diffusers, grilles, registers, etc., as well as several defense products for the United States. When production of the ceiling diffusers was first planned, the company found they could not be manufactured with existing equipment at their plant.

Tuttle & Bailey then consulted with various hydraulic press companies, searching for a design to meet their requirements. Finally, the A. B. Farquhar Company came up with the best design—and at the lowest cost—a 450-ton press with pressing ram speed of 0 to 45 in./min., approach and return speed of 390 in./min., and an operating hydraulic pressure of 2650 lbs./sq. in.

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and has required no maintenance other than occasional gasket replacement.

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## **Personnel**

*Continued*

**John Upton, Jr.**, appointed general manager, **The Hallden Machine Co.**

**Anthony Miller**, appointed sales manager, **J. F. Gottron Co.**, Chicago.

**James N. Trimble**, transferred to Chattanooga, district office, **Republic Steel Corp.**, Berger Mfg. Div.; **William J. Young, Jr.**, transferred to Chicago as sales manager; **Ralph W. Sponseler, Jr.**, becomes manager of locker sales, Canton; and **James R. Coursin**, becomes sales engineer, Detroit.

**Charles H. Crawford**, appointed plant manager, **Colonial Broach Co.**, Detroit.

**Robert A. Rohn**, named district sales manager, **Aluminum Co. of America**, San Francisco sales office. He succeeds **Howard W. Flye**, who has retired.

**Edward F. Needham**, appointed district sales manager, Denver area, Ramapo Ajax Div., **American Brake Shoe Co.**

**Burchard M. Day**, appointed advertising manager, **The Carborundum Co.**, Niagara Falls, N. Y.

**W. B. Swift**, appointed a sales representative, **General Box Co.**, Des Plaines, Ill.

**Burton G. Adams**, appointed sales representative, Southern California, **Chemical Specialties Div., Pennsylvania Salt Mfg Co.**

### **OBITUARIES**

**Charles S. Davis**, 77, chairman of the board and formerly president, **Borg-Warner Corp.**

**Donald B. McLouth**, 52, founder and president, **McLouth Steel Co.**, Detroit, recently of a heart attack.

**Edwin M. Ball**, superintendent of ore mines and quarries, Tennessee Coal & Iron Div., **U. S. Steel Corp.**, recently in Birmingham.

**H. Frank Coulter**, plant manager, **Fort Pitt Bridge Works.**

**Increases oxidation—**

**The Iron Age**  
FOUNDED 1855  
**Technical Articles**

# Powder Processes Solve Tough Metal Removal Problems



**By R. S. Babcock**

Laboratory Div. Head  
Cutting & Scarfing Processes  
Linde Air Products Co.  
New York

◆ Because the powder processes can sever tough materials very effectively, they have assumed an important position in industrial processing . . . Processes include cutting, scarfing, gouging, lancing and washing . . . First developed for stainless steels, these processes are now used on cast iron, high-temperature alloy steels, nickel and nickel alloys, copper and copper alloys, aluminum—even reinforced concrete and firebrick.

◆ Iron powder fed into an oxyacetylene flame oxidizes rapidly and greatly increases flame temperature . . . Tough refractory oxides are easily melted, permitting the oxygen to attack the base metal . . . On chrome-bearing alloys, iron oxide has a fluxing action on chrome oxide . . . Uniform and accurate powder flow is essential to satisfactory operation . . . Blending of iron powder with aluminum powder aids reaction on certain materials.

## Part I

◆ **ORIGINALLY** conceived as a method to progressively cut stainless steel, the powder processes are now used in various ways on high-temperature alloy steels, cast iron, bronze, nickel, aluminum, and even on concrete and certain refractories. In a relatively short span of years, they have taken on added importance in mills, warehouses, fabricating plants, oil refineries, scrap yards and foundries.

Before the development of the powder processes, oxidation-resistant materials were difficult or impossible to cut by conventional oxyacetylene methods without resorting to special techniques. In some cases, a wiggle technique was used by which the metal was slowly melted and blown away. In other cases, mild steel

waster plates were placed on the top side of stainless steel plates to provide the necessary heat and fluxing action.

Iron rod and wire have also been used to aid the cutting action. The rod was melted by the preheat flames and carried into the cutting zone in the form of droplets by the cutting oxygen stream. Stainless steel has also been cut by a slow melting-away action, using carbon or metal electrodes. All of these methods had obvious shortcomings.

Powder cutting, the first of the processes in which finely-divided iron particles are fed at a constant rate into the cutting zone, does two things—it permits oxidation-resistant materials to be cut almost as easily as low-carbon and



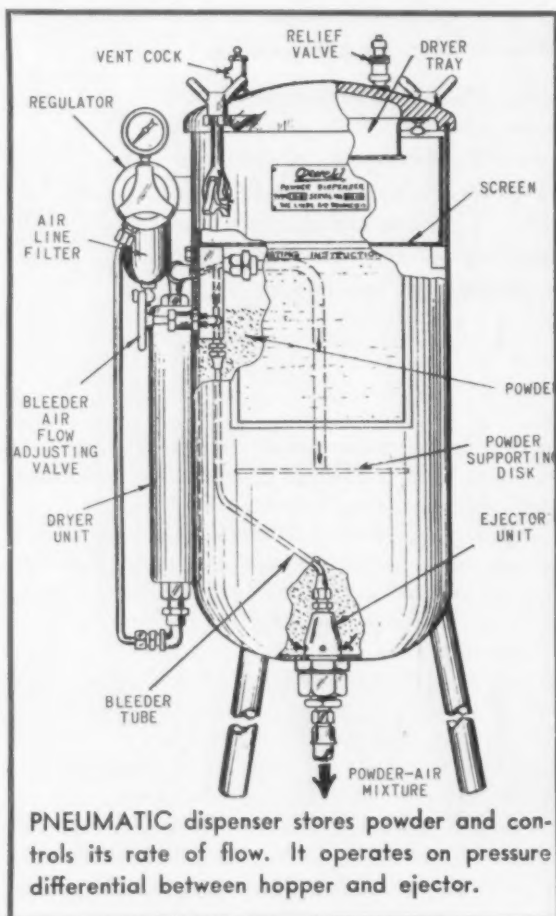
## Iron powder in the reaction zone generates sufficient heat to melt the refractory oxides . . .

low-alloy steels, and it stabilizes the cutting action on many of the newer carbon steels.

Stainless steels and chromium irons containing more than 5 pct chromium are among the materials difficult to cut by conventional oxy-acetylene methods. When these materials are heated in the presence of oxygen, a refractory chrome oxide layer forms on the surface of the reaction zone. This layer, which has a very high melting point, insulates the base metal and prevents the oxygen stream from attacking it.

### Heat melts refractory oxides

Iron powder added to the reaction zone oxidizes very rapidly and increases the normal temperature at the cutting face. Sufficient heat is generated to melt refractory oxides and permits the cutting oxygen to attack the base metal both chemically and physically. The oxygen stream removes the refractory oxides from the cutting face by entrainment, thus continually exposing new layers of metal to the cutting action. On chrome-bearing materials, the iron oxide has a fluxing action on chrome oxide.



## RECOMMENDED POWDER BLENDS

Powder Addition	Pct by Weight	To 100 lb Oxweld No. 200 Powder, add, lb	Application
Sodium bi-carbonate.	20	—	Refractory scrap
Aluminum..	10	11	Refractory scrap
Aluminum..	15	18	Heavily incrustated refractory scrap and nonferrous alloys up to 1-in. thick.
Aluminum..	25	32	Aluminum, brass and bronze
Aluminum..	30	43	Nickel, Monel, brass, Hastelloy and concrete
Aluminum..	40	67	Brass, bronze sections 6 in. or more thick, and copper up to 6 in. thick.

In addition to stainless steel and cast iron, powder cutting can be used on:

Metal or alloy	Maximum thickness, in.
aluminum	10
nickel	6
brass	10
bronze	10
copper	6
Inconel	10
Monel	10

Powder cuts have been made on such diverse materials as 70-30 copper-nickel sheet and heavily reinforced concrete up to 18 in. thick. The process has also been used on high-alloy and high-carbon steels, magnesium, Stellite and Hastelloy alloys, and nonmetallic materials such as firebrick.

Iron powder is also used to obtain flying starts on carbon steel rounds and round-cornered square bars. The heat emitted by the burning powder particles eliminates the long preheating period normally required in cutting such sections. Without the use of powder, preheating time is 15 to 25 pct of the cutting cycle. Powder is used only at the start of a cut. Its use increases production and reduces the cost per cut. In multiple setups, good starts occur with much greater consistency.

In cutting as in welding of stainless steel, the question usually arises as to what effect the heat will have on the corrosion resistance of the material. This is particularly important to the chemical industry where fabricated sections sometimes cannot be annealed.

As might be expected, powder cutting has no effect on stabilized stainless steels such as titanium-bearing type 321 and columbium-

# CONDITIONS FOR MANUAL POWDER CUTTING OF 18-8 STAINLESS STEEL

Thickness, in.	Nozzle size	Preheat flame length, in.	Cutting oxygen, psi	Cutting speed, ipm	Gas Consumption, cfh		Powder flow, lb per hr
					Oxygen	Acetylene	
1/4	4	1/8	60	25	96	14	15
1/2	6	1/8	50	20	190	15	15
1	6	1/8	50	15	190	15	17
2	8	1/8	50	12	370	19	17
3	8	3/16	50	9	370	19	19
4	10	3/16	50	7	490	30	19
5	10	3/16	70	6	630	30	20
6	12	1/4	50	5	660	42	22
7	14	5/16	60	4	1065	57	24
8	14	5/16	70	3	1210	57	24
9	14	5/16	80	2	1300	57	30

# TYPICAL CONDITIONS FOR POWDER CUTTING NONFERROUS MATERIALS

Metal or Alloy	Thickness, in.	Nozzle Size	Cutting Speed, ipm	Cutting Oxygen Pressure, psi	Powder Flow, oz per min.
Monel.....	1/4	6	11	40	4 1/2
	1/2	6	5 1/2	30	6
	1	8	3	50	8
	6	16	4	50	16
nickel.....	1/4	6	10	40	5
	1/2	8	4	40	8
	3/4	8	2 1/2	50	8
	1 1/16	10	4	65	9
	6	16	4	50	16
Inconel.....	1/4	6	24	40	4 1/2
	5/8	8	7	65	9
Hastelloy C.....	1 7/8	12	5 1/2	50	8
brass.....	4	16	3 1/2	50	12-16
bronze.....	6	16	2 1/2	50	16
copper.....	9	16	2	50	16-24
	4	16	3 1/2	50	12-16
	6	16	2	50	16-24
Hastelloy B.....	6 1/2	12	3	60	14
aluminum.....	7	16	4	50	16

bearing type 347. The nonstabilized types (301, 302, 304, 308, 309, 310, 316 and 317) are affected by heat and are subject to subsequent corrosion. However, the heat-affected zone is much narrower and less severe than that produced by welding. Also, since the effects of heat are not additive, the effects of cutting and welding will be no more severe than that of welding alone.

Assemblies that have been powder cut and welded can be restored to full corrosion resistance by proper annealing. During powder cutting, the effects of heat can be minimized by the use of water sprays on the top and bottom sides of the plate if the shape of the part permits.

In many respects, the equipment for powder cutting is similar to conventional oxyacetylene cutting equipment. However, additional apparatus is required to feed the finely-divided powder to the blowpipe. Two types of dispens-

ing equipment are used for this purpose—pneumatic and vibratory. Both types consist of three major components—filter and regulator for the conveying gas (either compressed air or nitrogen), a hopper, and a unit to discharge the powder from the dispenser.

The pneumatic dispenser is used for most general applications. Air entering the dispenser passes through a filter, a regulator, and a drying unit. It then enters the hopper where the powder is stored. Some of this air is fed through a bleeder tube to the ejector at the bottom of the hopper, thus creating a pressure differential which to some extent controls the rate of powder flow. Powder flow to the ejector is also aided by gravity.

From the dispenser, the air stream carries the powder to the blowpipe through rubber tubing. Air pressure in the hopper should be about 10 psi for cutting operations.

The vibratory dispenser is used most fre-

***Either of two types of dispensers—pneumatic or vibratory—feeds powder to the blowpipe at a uniform and controlled rate . . .***

quently in straight-line production cutting and shape cutting operations where uniform and accurate powder flow is required. One of the distinguishing features of this dispenser is the vibratory trough which serves in place of the ejector in the pneumatic dispenser. Powder is fed from the hopper onto the trough by gravity. Vibration "walks" the powder to the opposite end of the trough where it drops into the conveying air stream and is carried to the blowpipe.

Special powder-cutting blowpipes are similar to conventional blowpipe except for additional parts to accommodate the powder flow. Most standard cutting blowpipes can also be converted for powder cutting by the use of a powder attachment. Both types of equipment are equally effective, but the powder cutting blowpipe is more convenient to handle in confined areas.

In a powder-cutting blowpipe, operation of the powder valve is interlocked with the cutting oxygen valve. However, the powder valve opens slightly before the oxygen valve. Thus, when the cutting oxygen valve opens, the powder is immediately consumed, giving off enough heat to start the cutting action instantaneously.

Standard machine-cutting blowpipes can be

converted for powder cutting by either of two types of powder apparatus. In one, six powder ports in the nozzle encircle the preheat orifices. Since this design feeds powder into the cutting oxygen stream from every side, this attachment can be used for shape cutting as well as for straight-line cutting.

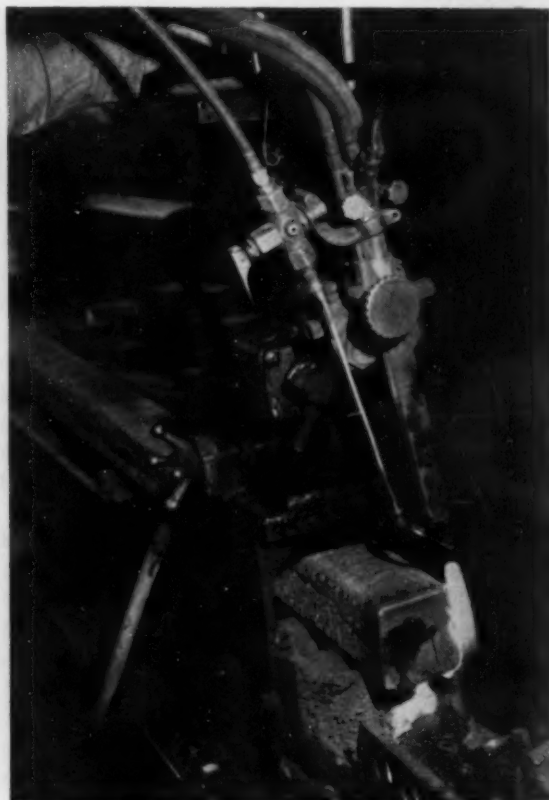
Another type of attachment feeds powder to the cutting zone from a single tube. This unit is simple and is well suited for straight-line cutting and bevelling of plates for welded joints. It can also be used on carbon steel rounds to provide instantaneous starts in otherwise conventional oxyacetylene cutting operations.

The single-tube attachment feeds powder at a greater rate than the multiple-port attachment. It operates very satisfactorily in cutting nonferrous materials such as copper and nickel alloys. Where high powder flow rates are required for cutting heavy sections, a double-tube tubular attachment is used. This attachment feeds the powder to the leading edge of the cutting oxygen stream.

**POWDER PROCESSES**—Part II of this three-part article will appear in the Aug. 5 issue of *The Iron Age*.



**IRON POWDER** permits stainless steel to be cut as easily as low-carbon and low-alloy steels.



**POWDER STARTING** on round-cornered billets reduces preheating time and increases output.



Handling eliminated—

# Progressive Dies Speed Output of Cup-Shaped Parts

♦ Cup-shaped parts are being made in a progressive die setup that permits the blank to be cut loose from the strip at Pontiac Motor Div. . . . The scrap skeleton aids in transferring the partially formed parts from station to station.

♦ No handling is required . . . Scrap is removed automatically following a trim operation . . . The new setup replaces a dial fed press operation . . . Operations include blanking, drawing, trimming, flanging and trimming . . . Parts are largely self-centering.

♦ A rack and pinion arrangement is used to eject scrap . . . Rack is fastened to the top shoe, and is stationary at the bottom . . . It cycles in and out with the press . . . Production rates of 500 per hour of finished parts are readily obtained.



By W. G. Patton  
Asst. Technical Editor

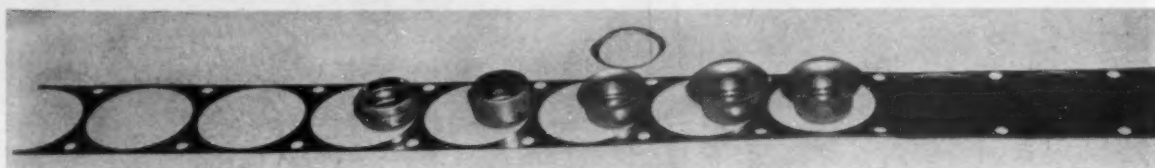
♦ A NOVEL APPROACH to a difficult stamping problem has enabled Pontiac Div. of General Motors to use a progressive die setup for the production of round, cup-shaped front wheel inner hub caps. Use of progressive dies has completely eliminated manual handling. Production per square foot of floor space has been increased. Of equal importance is the fact that presses are freed in a relatively short time so they can be used to run other stamped parts being made by the Pontiac Stamping plant. Die setup is a complete unit and can be used on more than one press of similar capacity.

Dies are designed so the part is self-centering after being transferred from the previous station by the scrap skeleton. Development of an automatic scrap removal unit has contributed

to the success of this processing method that could not otherwise have been used to produce this particular part.

While a dial-type feeder press had been used by Pontiac to produce front wheel inner hub caps, it was believed that a faster, more efficient operation could be devised by feeding a steel strip into a series of progressive dies. Hand loading would be eliminated. Closer tolerances could be held. If the scrap skeleton could be utilized to transfer the partially formed stamping from one station to the next, and scrap could be removed successfully following a trim operation, a progressive die setup might be used.

The 5-station progressive operation finally devised includes blanking, draw, flanging and



PROGRESSION of operations in production of cup-shaped front wheel inner hub caps. Stations

3 and 5 are for trimming. Use of progressive dies has eliminated all handling operations.

**Dies are of standard construction except for some carbide inserts used to reduce wear . . . An unusual gate arrangement removes finished parts.**

trim. An accompanying photograph shows the detailed progress of operations from flat rolled, coiled SAE 1008 steel to the final part. Coil stock specified is 0.0312 to 0.0375 in.

A standard Littell coil straightening and feeder machine is used for this operation in conjunction with a 200 ton Verson press. A loop is maintained at all times between the feeder rolls on the press and the coil feeder. Steel strip metering rolls mounted on the press open up at the bottom of the stroke and a proper amount of steel feeds into the die. Pilots keep the steel in proper alignment as it moves through the press.

The mechanical press normally used for this operation has a 12 in. slide. Shut height can be adjusted as much as 4 in. Controls permit inching, single cycle and continuous cycling of the press. Constant tension on the steel strip is maintained by rolls, identical to the feeder rolls, which are located on the exit end of the press. A scrap cutter, also mounted on the press, is adjustable to cut any length of scrap desired.

#### **Guide holes in scrap portion**

As shown, the first operation is blanking of the circular pieces. Simultaneously, two holes are pierced in the scrap. These holes serve as guides during the remaining operations.

Following the blanking operation, the blank is pushed back into its original position in the scrap. The scrap skeleton pulls the unformed blank along to Station No. 2. Partially-formed blanks are pulled along in the same manner.

At Station No. 2, the blank is located approximately by means of the two pilot holes pierced during the previous operation. During this

drawing operation, the strip is raised approximately  $\frac{1}{2}$  in. Simultaneously, cams move in from the sides to assist in centering each of the parts being formed. A 45° angle is left on the edge of the cup at Station No. 2.

Station No. 3 is the first trim station. As scrap is removed from the cup, the ring remains on the top punch. At this point, positive knock-out pins release the scrap from the punch as a chute moves in, at the top of the stroke, from the side of the press. This device moves out as the press comes down.

#### **How scrap is ejected**

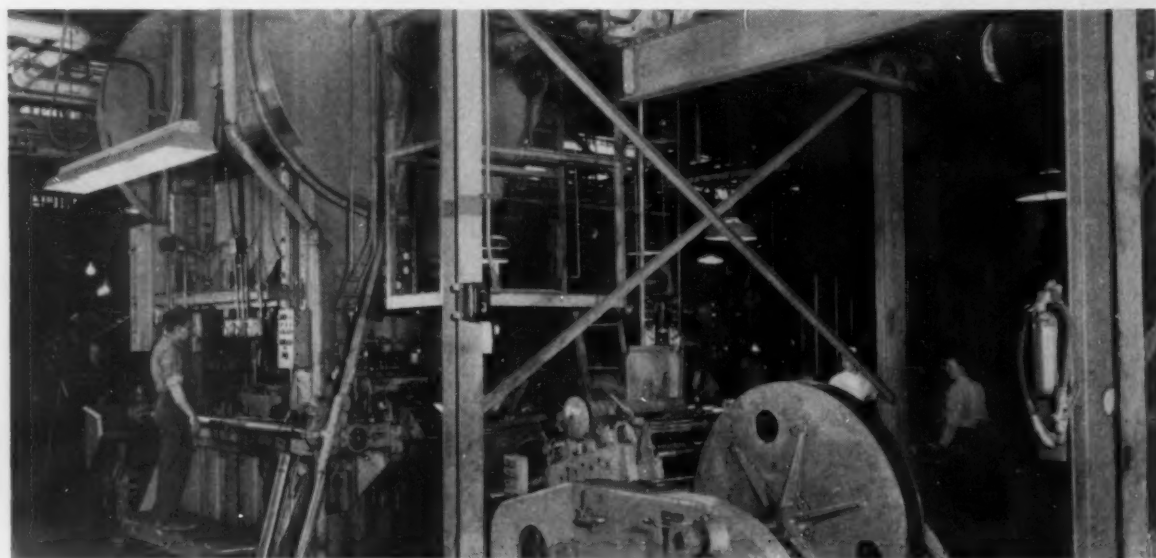
The scrap ejector utilizes a rack-and-pinion. The rack is fastened to the top shoe. This device is stationary at the bottom and, consequently, cycles in and out with the press. It is removable as a unit and can be installed on any press using this series of dies.

At Station No. 4, flanging of the sides is completed. Simultaneously, the 45° angle is removed.

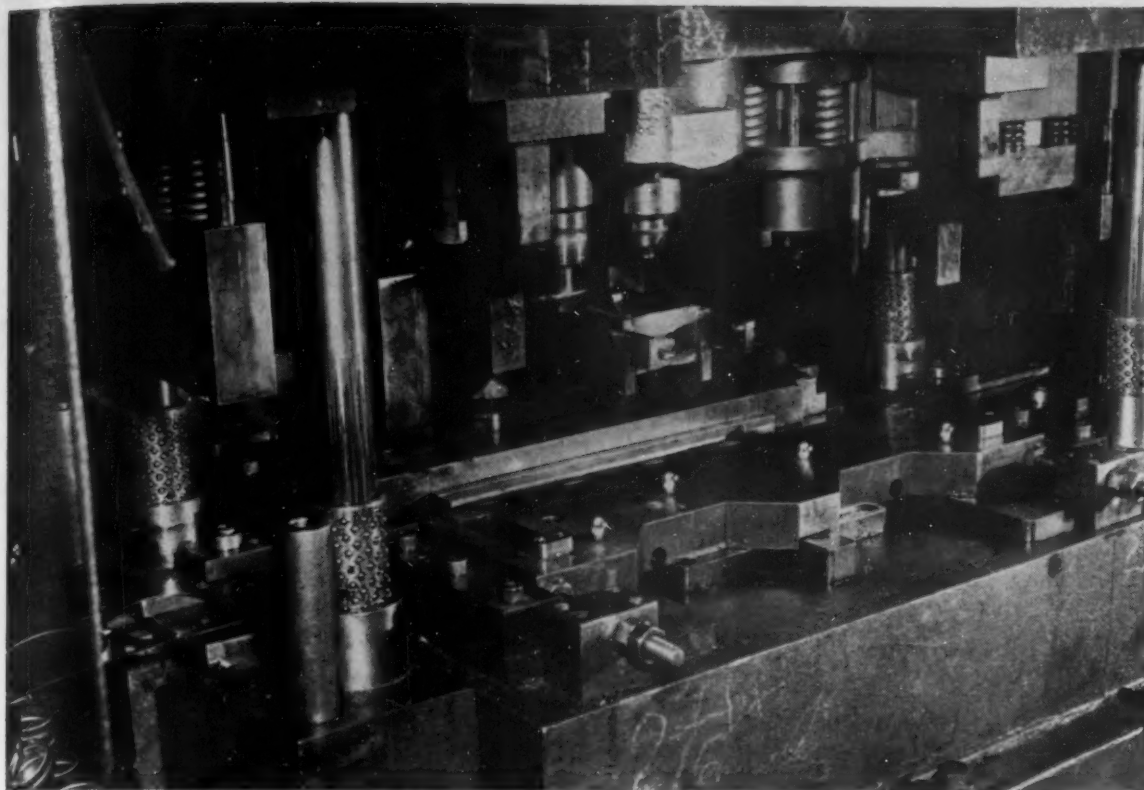
Final operation is a trimming operation in which the top punch, mounted on slides, drives the top edge of the metal down. Simultaneously, the cup is moving up. The net result of these forces is that the metal is formed as shown in the photograph.

Dies are standard construction except that the bottom of the draw die, bottom of the finish flange, top and bottom of the crimping operation have carbide inserts to prevent wear.

Finished stampings are removed from the press in an unusual manner. A pulley, hooked to the ram, has a deadweight for retraction. As the ram goes up, the cable which runs over a



STANDARD Littell coil straightener and feeder and 200-ton Verson press are used in operation.



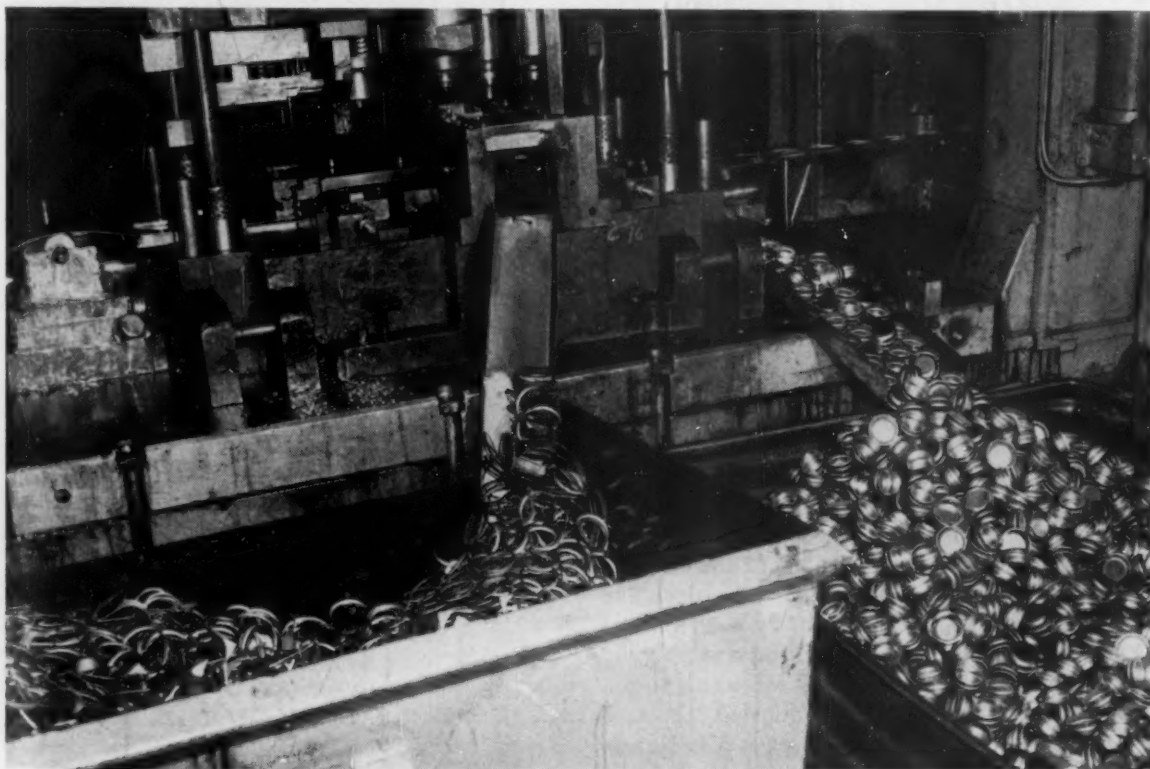
**MECHANICAL** press normally used for this operation has a 12 in. slide. Shut height adjust-

ment is 4 in. Scrap skeleton is shown moving out of the press at left of photograph.

pulley pulls a gate along, pushing off the part. As the ram goes down, the deadweight pulls the gate back into its former position.

Using this setup, Pontiac is able to produce a

large volume of parts while holding tolerances within 0.005 in. Production of 500 pieces per hour is readily obtained although the operating rate of the press is, of course, much higher.



**UNUSUAL** method of removing trim has been developed for use in the press. Trim is shown

falling down a chute at the left. Completed parts fall into tote bin standing at right.



# High Temperature Alloys: Air Force Machinability Report

## Part IV

♦ Statistics on life expectancy of tools used in milling, drilling and turning high temperature alloys have been brought up to date in the latest Air Force Machinability Report . . . Unusual capacity for work hardening shown by these metals poses machining problems which require special handling . . . Carbide, cast alloy and high-speed steel tools were used in the studies.

♦ **TOOL LIFE EXPECTANCY** in milling, drilling and turning high temperature alloys are compared in the United States Air Force Machinability Report, 1954. The report, prepared by the Curtiss-Wright Corp., Wood-Ridge, N. J., for the Air Force, brings up to date prior studies on the machining of high temperature alloys.

Milling operations were performed with carbide and cast alloy cutters. Turning was done with carbide and high-speed steel tools. Drills were conventional high-speed steel.

New data for turning operations were obtained for the alloys M-252 and A-286. The A-286 alloy has machining and tool life characteristics in the range of the other turbine disk materials. M-252, however, has proved more difficult to machine than Inconel-X or S-816.

Certain precautions are necessary in drilling high-temperature alloys because of the unusual capacities of these alloys to work harden. The chisel point of the drill constantly rubs against the bottom of the hole in drilling and thereby work hardens the metal. It is essential, therefore, that the drill never be allowed to rotate in the hole with the feed disengaged. Unless this precaution is followed the bottom of the hole may be workhardened to such a degree that the metal is no longer machinable.

Also, because of the work hardening capacity of the high-temperature alloys, the cylindrical wall of the hole is usually work hardened so that it is very difficult to machine. It is therefore not practical to use pilot drills on these alloys for the drill used to open the hole to the final size may fail very rapidly.

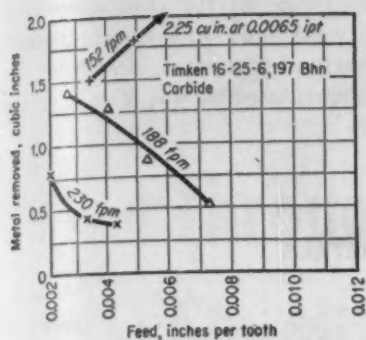
Tool-life data in face milling operations was developed for seven different alloys. Carbide and cast alloy cutters in a climb face milling operation. Several of the alloys were heat treated in different ways.

Data, presented in a series of charts, has been plotted on rectangular coordinates giving metal removed in cubic inches for a preselected degree of tool wear at various feeds per tooth from 0.002 to 0.012 in. Runs at several cutting

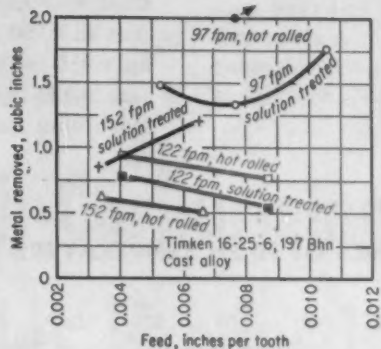
### DRILLING SPEEDS AND FEEDS

Material	Condition	Brinell Hardness	Speed, fpm	Feed, ipr
Inconel X.....	Solution treated and aged	315	10	No. 36 drill: 0.002-0.004
Discaloy-24...	Solution treated	183	40	
Refract-aloy-26	Solution treated and aged	311	25	1/4 in. drill: 0.004-0.006
Timken 16-25-6	Solution treated	175	50	Point angle: 118°-140°
AISI 410.....	Annealed	197	70	
AISI 430.....	Annealed	174	50	Relief: 7°
AISI 347.....	Annealed	150	50	

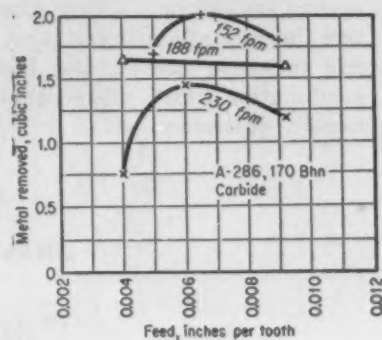
# Tool Life In Milling High Temperature Alloys



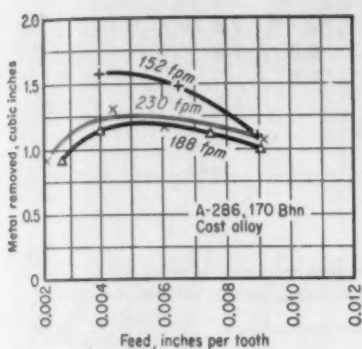
**Timken 16-25-6**



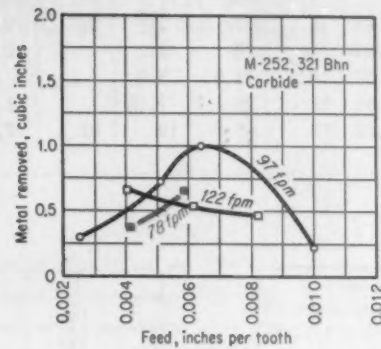
**Timken 16-25-6**



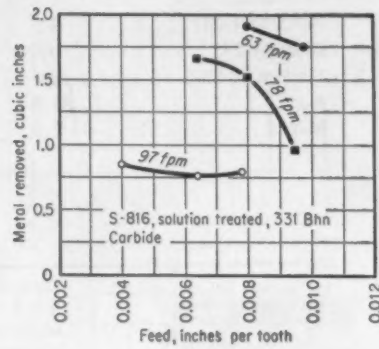
**A-286**



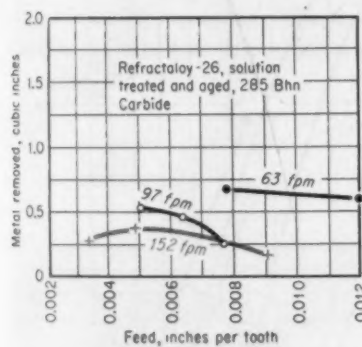
**A-286**



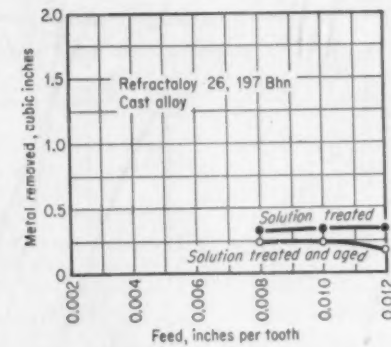
**M-252**



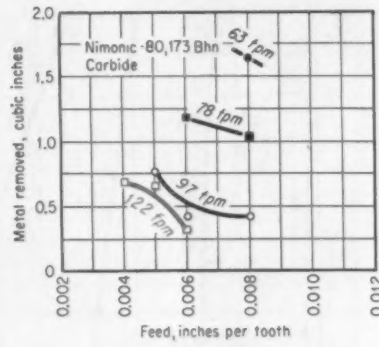
**S-816**



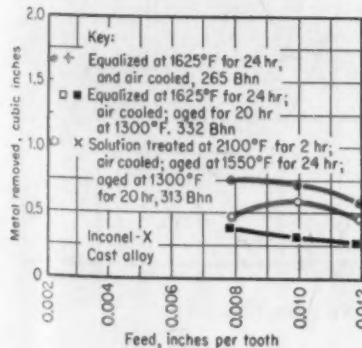
**Refractaloy-26**



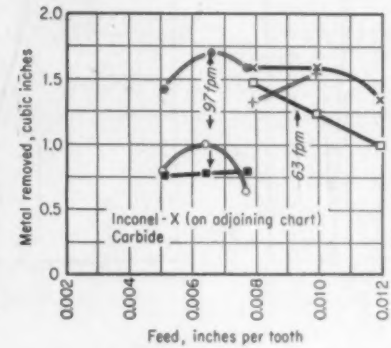
**Refractaloy-26**



**Nimonic-80**



**Inconel-X**



**Inconel-X**

Operation: Climb face milling one tooth fly-cutter  
Tools: Carbide and cast alloy  
Cutting fluid: Soluble oil, 4 pct  
Endpoint: 0.060 in. wearland for cast alloy  
Endpoint: 0.015 in. wearland for carbide  
Depth of cut: .050 in.  
Width of cut: 2 in.  
Tool angles, carbide: 0-10 neg-60-6-6-0.005 in.  
Tool angles cast alloy: 0-0-30-6-6-0.040 in.  
Tool angles in milling follow this order: axial rake, radial rake, corner angle, end cutting edge angle, relief, nose radius.

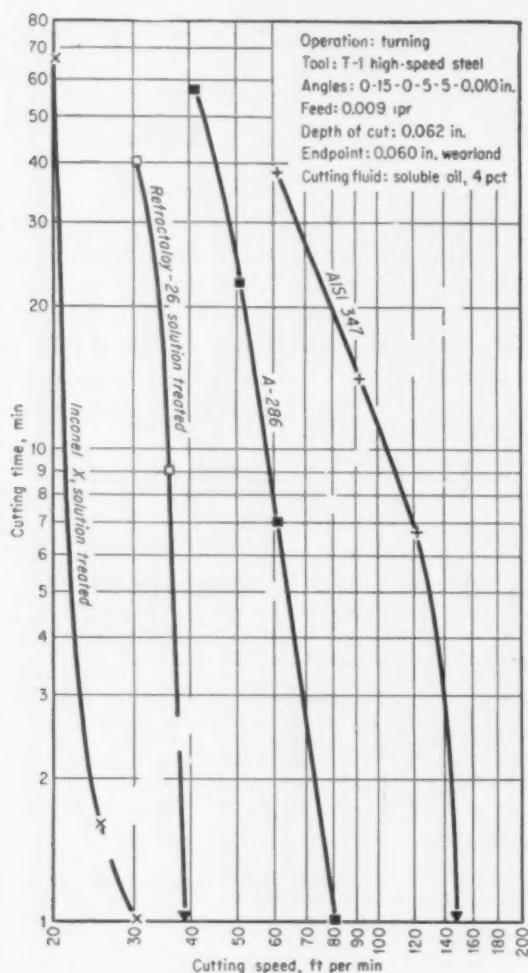
## Highest feed-speed combination for best tool life desirable.

speeds are shown. Cutting speed and feed control the rate of cutting, so that for a given tool life in cubic inches, the highest feed-speed combination which will produce this tool life is usually desirable.

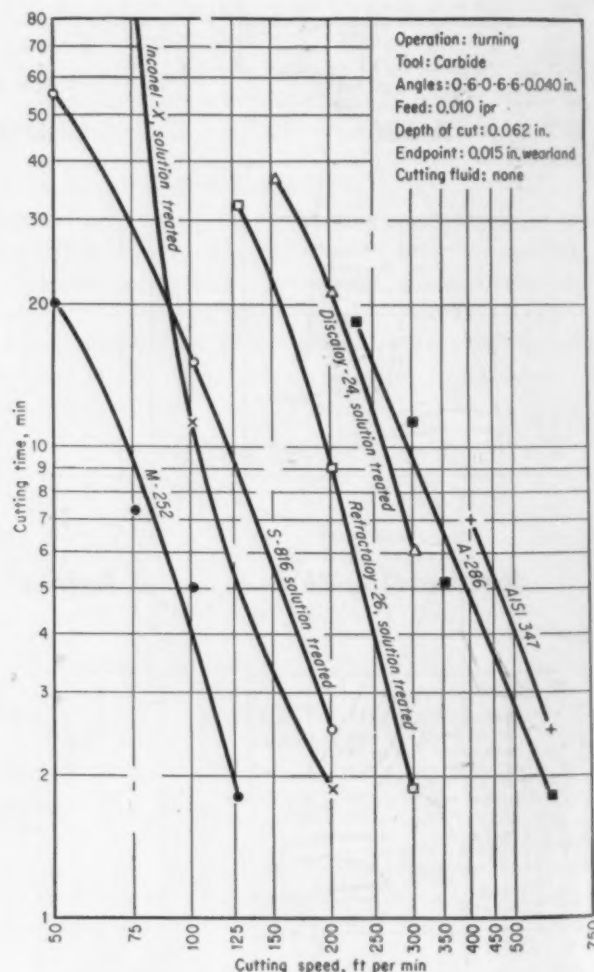
In the tool life tests, a single tooth flycutter was used in climb face milling. Tools were of carbide and a cast alloy. A soluble oil cutting fluid was used. Endpoint for cast alloy tools was an 0.060 in. wearland; for the carbide tools, an 0.015-in. wearland was used. Depth of cut was 0.050-in. and cut width was 2 in. for the machining tests.

## ANALYSES OF HIGH TEMPERATURE METALS

	Fe	C	Cr	Ni	Mo	Co	Al	Mn	Ti	Cb	Other
AISI-347	Bal	0.08	18	10						0.8	
S-816	Bal	0.4	20	20		43				4	W: 4
Inconel-X	8		15	73			0.7		2.5	1	
Refractory-26	Bal	0.03	18	37	3	20	0.2	0.7	2.6		
Discaloy-24	Bal	0.03	13	26	3		0.1	0.8	1.6		
Timken 16-25-6	Bal	0.07	14.6	25.3	5.9			1.5			Si: 0.5
A-286	53.5	0.05	15	26	1.45		1.7		1.6		V: 0.2
M-252	2.0	0.10	19	53.5	10	10	0.75		2.5		



METAL REMOVAL using high-speed steel tools in turning several high temperature alloys.



METAL REMOVAL using a carbide tool in turning operations on high temperature alloys.



Use low-carbon steels—

# Through-Carburizing Simplifies Production of Formed Parts

♦ Low-carbon steel parts, through-carburized to an equivalent high-carbon steel content, combine ease of forming with high physical properties . . . In many cases this technique can cut both material and production costs.

♦ Success of the method hinges on the critical carburizing step . . . Automatic control equipment and improved furnaces have made the operation practical in routine production . . . Benefits include less scrap, better control of dimensions, and improved die life.

By W. D. Latiano  
Metallurgical Editor



BRACKET is made from 1010 steel then through-carburized to 0.65 pct carbon and hardened.

♦ SUBSTITUTION of low-carbon steel for high-carbon steel in formed parts, with economies in both materials and production, is often possible through use of the through-carburizing treatment. The low-carbon steels simplify fabrication. The through-carburizing treatment imparts the carbon content needed to give desired physical properties.

Use of this method by International Business Machines Corp., Poughkeepsie, N. Y., has helped that company eliminate several problems connected with production of parts from high-carbon steel. The high-carbon steels are hard to machine, develop high stresses in stamping, crack at sharp bends, and result in short die life. Low-carbon steel, however, can be formed and machined easily.

Carburizing low-carbon steel to definite carbon contents requires good carbon control. Such control can be attained by carburizing in an atmosphere held to close carbon levels.



ROLLERS are cut from 1018 bar stock, through-carburized to 0.90 pct carbon and austempered.

A typical example is a steel bracket made to close finished tolerances and having three right angle bends. Originally 1065 was specified. IBM found the parts could not be made economically from this material. Cracking at the bends was excessive. Dimensions could not be maintained because of the high stresses and die life was short. When 1010 steel was specified for this part and through-carburized to 0.65 pct carbon, these difficulties were eliminated.

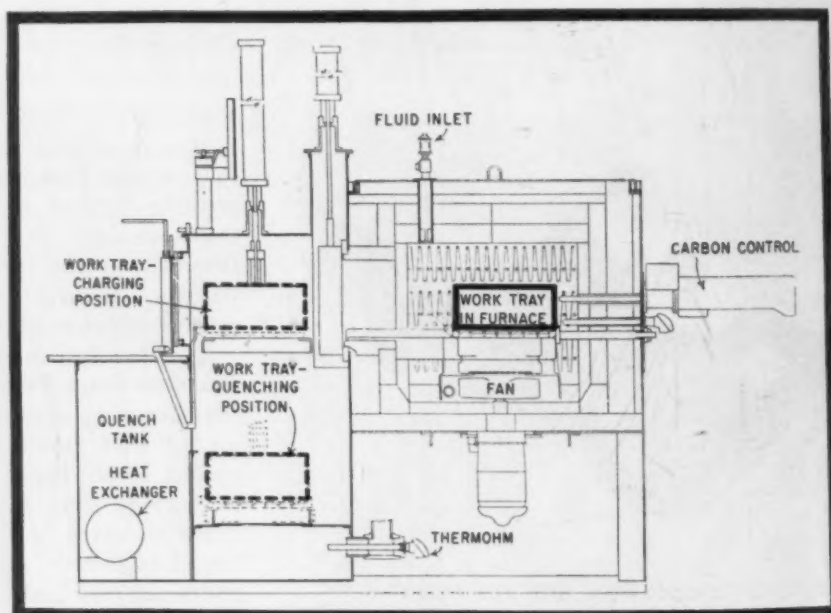
Another part, a shell-like roller  $\frac{1}{4}$  in. in diam with a  $\frac{1}{32}$ -in. wall, was originally made from 1090 steel. The high-carbon steel was hard to machine in automatic screw machines. A

switch was made to 1018 steel and the part through carburized to 0.90 pct carbon. Carbon content is being held within close limits and the part is now made without machining difficulties.

### Carburizing is critical

To apply this technique successfully, considerable care must be given to the through-carburizing treatment. Carburizing of these parts is critical. Carbon potential of the atmosphere must be maintained at a constant level. To do this IBM uses a Leeds and Northrup automatic box type furnace. It is electrically

ATMOSPHERE GENERATED in the heating chamber is fan circulated through the work. Carbon potential is controlled by a unit which monitors the amount of carburizing fluid the furnace uses.



**Uniform carburizing conditions give close carbon control . . .**  
**Alternating grades of steel can be treated with minimum time loss.**

heated and the quench tank is fully enclosed.

Atmosphere is generated in the furnace heating chamber by cracking Homocarb carburizing fluid at regular furnace operating temperatures. Carbon potential is automatically controlled by an L&N Carbohm, a carbon controlling unit. Uniform carburizing conditions are maintained and closer carbon limits are possible.

Furnace operation is simple. The carbon control unit is preset to the desired carbon level. After the atmosphere is at the proper level the basket of parts to be processed is placed in the furnace vestibule and the door closed. The vestibule is purged of air in 2 to 3 minutes. The inner furnace door is then opened, the work-loaded basket pushed into the heating chamber, and the inner door is closed. After the work has been in the heating chamber the required time, it is withdrawn to the vestibule. An elevator lowers the work into

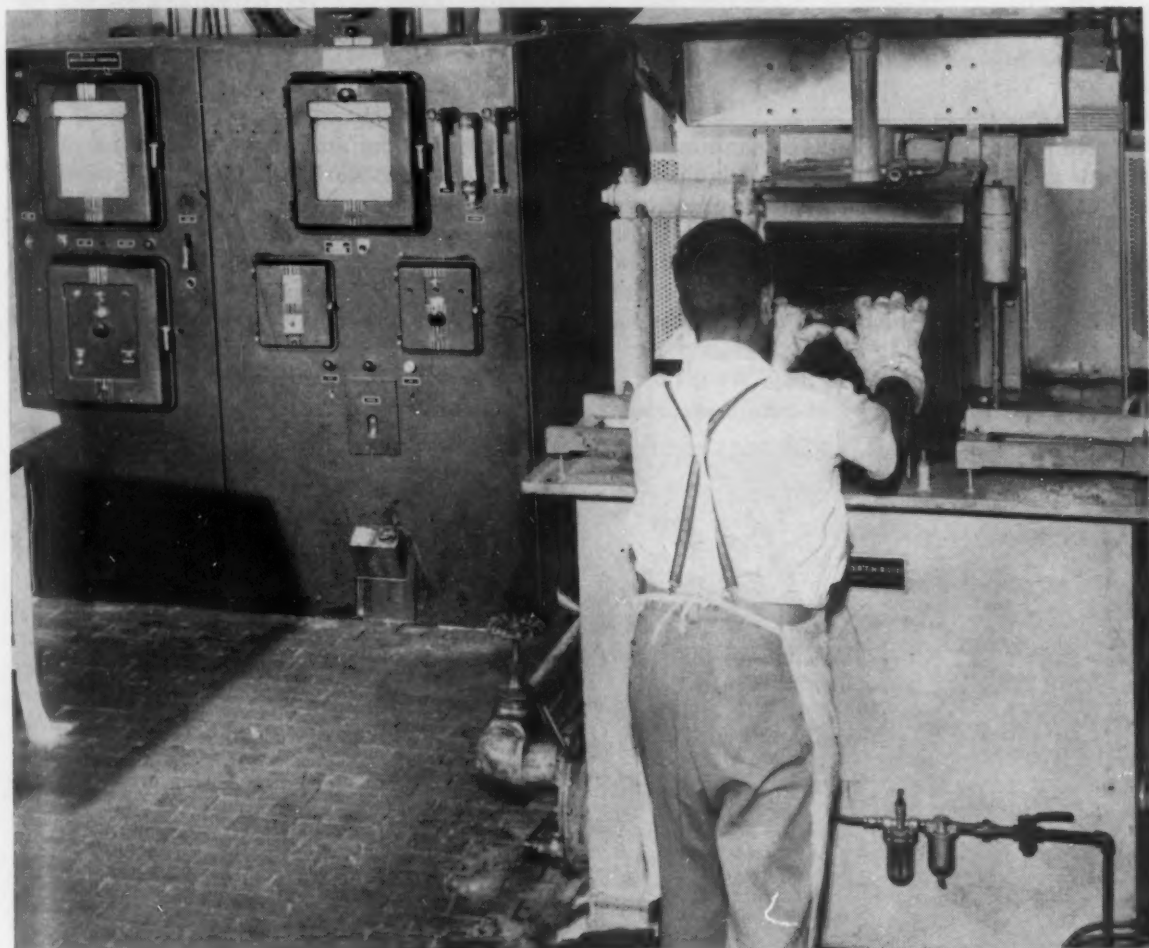
the quench tank.

A fully loaded basket of parts can usually be quenched in 2 to 3 minutes. After quenching the basket is raised into the vestibule, the outer door is opened, and the work taken from the furnace.

**May be quickly changed**

Because carburizing fluid is used for generating the atmosphere, little time is required to change from one carbon potential to another. Alternating grades of steel can be treated with a minimum loss of time. IBM is using this furnace for carburizing, carbon correcting, and regular hardening.

About  $\frac{1}{4}$  pint per hour of Homocarb fluid is used when processing parts in the range of 0.60 pct carbon. This will vary according to the surface area being treated and the carbon potential being maintained in the furnace.



**ONLY MANUAL OPERATION** on furnace at IBM is loading and unloading. After carbon and

temperature settings are made operation is automatic. Quench oil temperature is controlled.



# Bulk Handling System Cuts Cupola Charging Costs



By C. B. Setterberg  
Plant Manager  
American Rock Wool Corp.  
South Plainfield, N. J.

♦ A NEW BULK MATERIAL handling installation, featuring one-man push button control, has replaced three men with wheelbarrows for charging cupola furnaces with slag and coke to make rock wool insulation. In addition to the two-third saving in man hours and the elimination of heavy labor, the new system is expected to pay for itself in 2½ years.

Installed for the American Rock Wool Corp., South Plainfield, N. J., the one-man system ac-

♦ Coke and slag at the rate of 250 tons per shift are automatically charged in rock wool cupola furnaces with a new bulk handling system . . . One man and the pushbutton system now do the work of three men with wheelbarrows . . . The new system is expected to pay for itself in 2½ years.

♦ Gravity aids the flow of bulk materials from bottom-discharge storage hoppers to reciprocating feeders, belt conveyors and automatic weigh hoppers . . . Electrically operated transfer cars receive weighed charges, transfer these to skip hoists . . . The system charges four cupolas every 25 minutes.

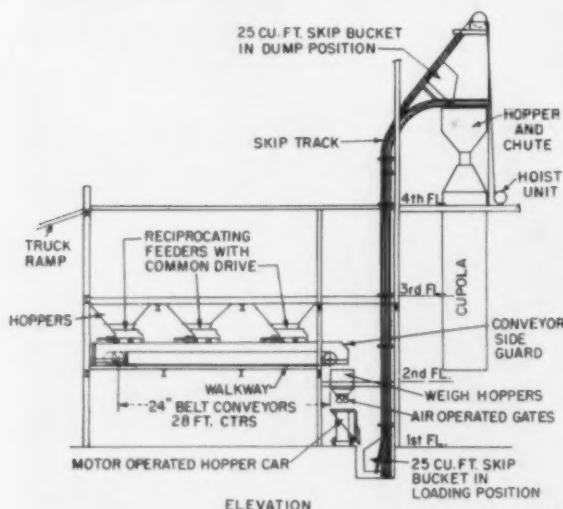
curately weighs and charges 250 tons of raw material each working shift. The layout of storage bins, reciprocating feeders, belt conveyors, weigh hoppers, transfer cars and skip hoists was built by the Gifford-Wood Co., Hudson, N. Y.

Incoming coke and slag are delivered to the insulation firm by rail. Trucks carry these raw materials from the railroad siding to 12 storage bins arranged in four rows of three each.

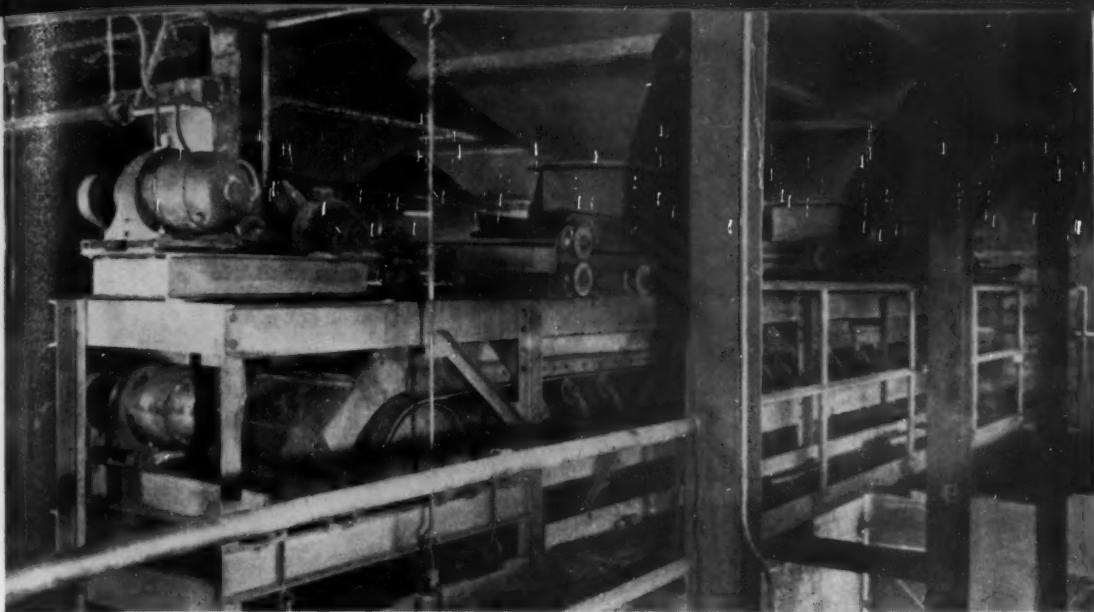
The handling system which processes material from the storage bins comprises: (1) Twelve reciprocating feeders, one at the base of each bin; (2) four belt conveyors, one beneath each row of bins; (3) four weigh hoppers, one at the delivery end of each conveyor; (4) a rail-mounted transfer car which travels beneath the weigh hoppers; (5) two skip hoists, located alongside the transfer car tracks. Each skip hoist charges two cupolas.

The reciprocating feeders deliver material to the conveyor belts in an even stream, each belt receiving material from three feeders. Feeders delivering to a given belt are driven by a common motor and may be disengaged from the drive mechanism so that one, two or three bins in any one row may be discharging at a given time.

Each belt delivers to an individual weigh hopper. Automatic controls stop the belt when a preset weight has been delivered. The three



SCHEMATIC shows how one-man handling system works from storage bins to the cupolas.



FROM BINS (top) to weigh hopper (lower left), handling system gets an assist from gravity.

slag hoppers are set for 1000 lb; the coke hopper for 300 lb. Hoppers store their contents until called for by the transfer car.

The transfer car is divided into two compartments and can receive material from any of the four hoppers. The handling system operator positions the car under a given hopper equipped with an air-activated gate which allows the contents to flow by gravity into the car.

When the gate is closed, an electric button starts the conveyor which refills the hopper. The operator moves the car by push-button control of a motor mounted on the car. Electricity is supplied by a sliding cable.

The transfer car has a lever-operated hinged front for gravity discharge into the bucket of either of the two skip hoists. The hoist bucket travels upward along angle-iron guides, and upends into a hopper which serves chutes lead-

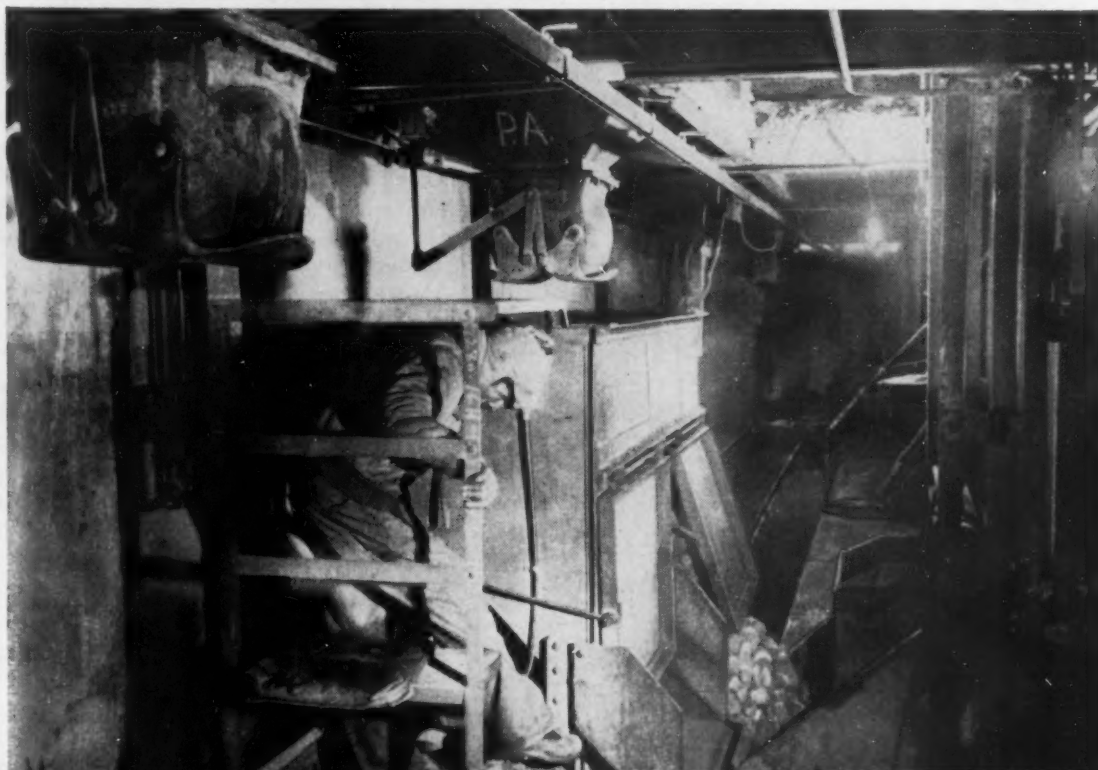
ing to the cupolas. A motor-driven cable drum near the top of the skip-hoist structure raises and lowers the bucket. Pushbutton hoist controls are at the base of the structure. When one cupola is being charged, the chute to the other is closed.

In operation, a light goes on when a cupola charge falls below a certain level, and the system operator acts to replenish the charge.

While waiting for the next light to go on, the operator fills the two compartments of his car, one with coke and the other with slag. Cupolas require charging about every 25 minutes. This schedule gives the operator time to load the transfer car and skip hoists, and also keep production record forms.

Under the old system, material was hand shoveled into wheelbarrows which were pushed to the cupolas for dumping. It was heavy, dirty, disagreeable work for three men per shift.

TRANSFER CAR takes materials from weigh hoppers, loads skip hoist with cupola charge.



# Test New Alloy Steel For Pressure Vessels

◆ SHOULD PRESSURE VESSELS made from modern alloy steels be designed on the basis of yield strength rather than ultimate strength? This and related questions were posed in dramatic burst and drop weight tests recently staged by United States Steel Corp. and the Chicago Bridge & Iron Co. at the latter's Birmingham, Ala., plant.

Representatives of the nation's top regulatory bodies—federal, industrial and military—were invited to the demonstration. Before this group, representing principal agencies governing construction of pressure vessels, the tests sought to demonstrate: (1) The fitness of quenched and tempered plate for construction of pressure vessels. (2) The propriety of utilizing the great strength potential of this type of steel. (3) The suitability of modifying the present requirements for stress relieving, as far as they pertain to toughness.

Two methods, a pressure test and a drop weight test were used to demonstrate both strength and toughness of the steel. Eight cylindrical pressure tanks were built for the tests. Four were used for preliminary testing and four for the demonstration tests. For each test method, burst and drop weight, a vessel was tested in the as-welded and in the stress-relieved conditions.

The vessels were built according to the 1952 ASME boiler code except for three deliberate departures: (1) Quenched and tempered plate

was used. (2) Design was based on yield strength rather than ultimate strength. (3) A bending mandrel 2½ in. in diam was used for qualification tests.

The alloy steel used was designed and heat treated to have toughness to withstand brittle fracture at low temperature. Yield strengths and elastic ratios are high. Ductility transition temperatures, as determined from test pieces taken from each plate used, are very low, in the range of -194° to -238°F. Elongations are slightly lower than obtained with steels now used for pressure vessels but are considered adequate.

For the tests the vessels were set up in special cradles. The cradle for the drop test rested beneath a guillotine-like structure containing a 13-ton weight. Through the tanks, connected to a pumping system, a calcium chloride brine chilled with dry ice was circulated. By this means each vessel was refrigerated to -45°F.

For the burst test, pressure was raised in 500 psi increments by continued pumping. As-welded Vessel No. 1 broke after 27 min. At a bursting pressure of 2850 psi cold yellow brine geysered out through a long tear. Examination showed the break to be 117 in. long. Fracture was on a 45° plane.

The drop test was set up so the heavy ingot top could be dropped from different heights. After each fall of the weight, the vessel was measured for distortion.

For the drop test, pressure was again raised by pumping. At 938 psi girth of the vessel was checked. At a hydraulic pressure of 1875 psi, pumping was stopped and the vessel sealed off. Girth was re-checked. Calculated pressure within the vessel was 1875 psi.

No measurable sag was found after the first 52-ft drop of the 13 ton weight. After the second drop, a fall of 73 ft, no sign of fracture showed. For the third drop test the weight was raised to 101 ft. Falling with a velocity at impact of 80.5 feet per second, the weight landed on the tank with an impact energy of 2,790,000 ft-lb. Under this third and greatest blow, the tank broke with a ductile fracture. But the ability of the steel to withstand great shock at low temperature had been demonstrated.

## COMPOSITION OF CARILLOY T-1 STEEL IN TEST

	Ladle Analysis
Carbon.....	0.15
Manganese.....	0.92
Phosphorus.....	0.014
Sulfur.....	0.020
Silicon.....	0.26
Nickel.....	0.88
Chromium.....	0.50
Molybdenum.....	0.46
Vanadium.....	0.06
Copper.....	0.32
Boron.....	0.0031



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# RUST-OLEUM

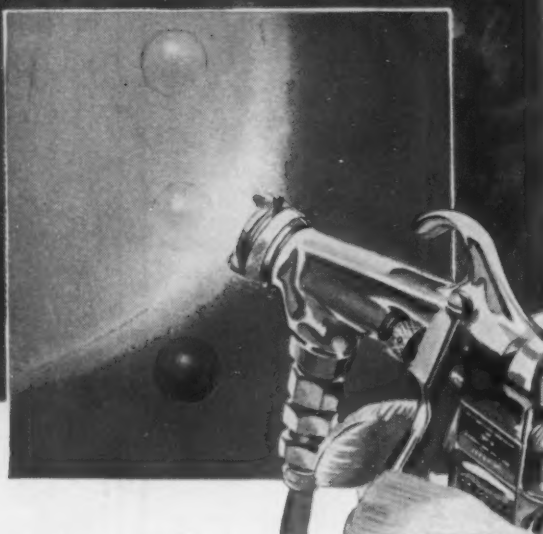
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## Beautify As You Protect

Simply brush Rust-Oleum 769 Damp-Proof Red Primer directly over the rusted surface after scraping and wire-brushing to remove rust scale and loose rust. Rust-Oleum's specially-processed fish oil vehicle penetrates rust to bare metal—saving time, money, and metal! Then—beautify as you protect with Rust-Oleum's brilliant array of finish coatings. Specify Rust-Oleum for new construction, maintenance, and re-modeling. See Sweet's for complete catalog and nearest Rust-Oleum Industrial Distributor, or clip coupon to your letterhead . . . and mail today.



**ABOVE:** Applying Rust-Oleum 769 Damp-Proof Red Primer Over Rusted Surface After Scraping and Wire-Brushing to Remove Rust Scale and Loose Rust.



**AT RIGHT:** Applying Rust-Oleum Gray (One of Many Rust-Oleum Colors for Rust Prevention and Decorative Beauty).



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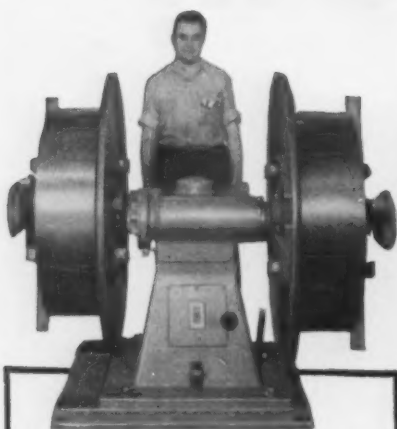
See local classified telephone directory under Rust Preventives or Paints for nearest Rust-Oleum Industrial Distributor.

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| <input type="checkbox"/> Please Show Me the Rust-Oleum "Rusted Panel Demonstration." | <input type="checkbox"/> Test Application of Rust-Oleum Over Rusted Metal Surfaces in My Plant. |
| <input type="checkbox"/> Complete Literature with Color Chart.                       | <input type="checkbox"/> Nearest Rust-Oleum Industrial Distributor.                             |

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Production continues while you reload one side of this Littell No. 25-12 Double Reel. When one coil is used up the reserve coil swivels into feeding position in a matter of seconds. The idle side is reloaded while the working side pays out. Electric Brake with rheostat controls provide an adjustable spindle drag. The Reel Pedestal, mounted on a machined base plate, permits accurate line-up with the center of the die. No. 25-12 takes a 2500 pound coil on each side, and is one of the many Littell Automatic Centering Reels perfectly adapted to pressroom automation.

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coil  
weight  
calculator



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# FREE

New Bulletins

## Technical Literature

### Aviation division

Bingham-Herbrand's new aviation division is illustrated with captions in a leaflet put out by the company. Reason for the new division is to produce forgings used in the aviation industry. Such products as turbine buckets and compressor blades for jet aircraft engines, miscellaneous semi-precision forgings, and special alloy hand tools are some of the new products. *The Bingham-Herbrand Corp.*

For free copy circle No. 1 on postcard, p. 127.

### Wire-rope hoist

Leaflet offers diagram with explanations of the new electric wire-rope hoist for the 2-ton class. This new J-3 hoist is suited for application as an auxiliary hoist on overhead traveling cranes. It speedily handles lighter loads, saving wear-and-tear on the main hoist. *Robbins & Myers, Inc.*

For free copy circle No. 2 on postcard, p. 127.

### Locking nuts

Booklet gives facts about 12-pointer plain and self-locking nuts. The twelve pointer nut is designed to permit smaller tool clearances than is practical with many other nuts. Because the twelve pointer nut distributes the wrench load, thin-wall, double-hexagon socket wrenches may be used without danger of breaking at high torque or impact loads. *National Machine Products Co.*

For free copy circle No. 3 on postcard, p. 127.

### Thermal radiometers

Two types of portable radiometers are described in a new leaflet; one for total-hemispherical thermal radiation measurements, the other for net-exchange measurements. Both radiometers include thermopile transducers capable of providing an output suitable for direct-driving recording instruments and air-blowers which eliminate convection effects at the transducers. Cross-section drawings

### FOR YOUR COPY

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 127.

show the design variations between the two. Graphs are included to show response versus angle-of-incidence of radiation, and spectral reflectivity as a function of wave length. Specifications are given covering sensitivity, response time, accuracy, and similar details. *Beckman & Whitley, Inc.*

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### Hydrovane compressor

The new Davey Hydrovane compressor has no valves, piston rings, connecting rods or crankshaft. It is completely self-contained with a minimum of piping and is nearly frictionless. These and other features are described in a folder along with a list of questions and answers about the compressor. *Davey Compressor Co.*

For free copy circle No. 5 on postcard, p. 127.

### Control valve

Solenoid pilot operated control valves simplify the operation of automated equipment. The Speed King valve is designed and built to meet the requirements set by J.I.C. for accessory equipment of the push-button machine. Speed King has all parts totally enclosed, will operate safely and for extended periods under water. A new bulletin describes and illustrates its features with pictures and diagrams. *Valvair Corp.*

For free copy circle No. 6 on postcard, p. 127.

### Chuckling reamers

Pratt & Whitney high speed steel straight fluted chucking reamers are heat treated and subjected to a special surface hardening treatment. As a result, these reamers cut longer, have long lasting accuracy and greater resistance to chip abrasion. Initial wear is reduced by the grinding methods which produce a fine finish on the chamfer and lands of these chucking reamers. *Pratt & Whitney Div.*

For free copy circle No. 7 on postcard, p. 127.

### Dragline trailers

Floormaster Dragline Trucks for both in-floor and overhead conveyor lines feature an all-welded structural frame, no periodic lubrication required, all wheels rubber tired with metal hubs, cam operation of dragline pin, handle on overhead chain hook and 1 1/8 in. tongue and grooved hardwood deck. Details of construction, engineering highlights and installation photographs are included in a circular, with complete specifications on the various models available. *Lewis Shepard Products, Inc.*

For free copy circle No. 8 on postcard, p. 127.

### Thermocouples

A new bulletin describes uses and limitations of noble metal thermoelements and chromel vs. alumel thermoelements and associated equipment. The platinum vs. platinum-rhodium thermoelement provides extreme accuracy for measuring temperatures up to 2900° F. Of the base metal group, the chromel vs. alumel thermoelement has come to have the widest application because of its stability and high output, chemical use and wide range. Specifications are included. *Charles Englehard, Inc.*

For free copy circle No. 9 on postcard, p. 127.

### Tube cutter

Brehm's new tube cutter described in a folder is said to cut tubes

Turn Page

## • Some plain talk about strapping How Brainard's complete service- steel strapping and strapping tape- can help improve your packaging

• Some people say that steel strapping and strapping tape are directly competitive. We think not. Rather, each method has applications where it does the job best. In most shipping and packaging operations there is a need for both methods. That's why we offer both. Your Brainard salesman is in position to give you completely unbiased recommendations, remove the guesswork and provide you with the strapping materials that best meet *your* requirements. Why not get his advice and use his services now? For complete information write Brainard Steel Division, Dept. O-7, Griswold Street, Warren, Ohio.



Brainard Steel Strapping



Brainard Strapping Tape



**Brainard**

SHARONSTEEL

STEEL DIVISION  
SHARON STEEL CORPORATION

**CUTS SHIPPING COSTS 30%.** Here Brainard salesman Jack Witzig of Detroit demonstrates strapping cooling coils for air-conditioning units. This method which Jack recommended saves 30% in labor costs and saves materials too. The strapping on the coils is never removed—it holds the coils rigid after installation. Trained Brainard salesmen like Jack Witzig are located throughout the U. S. and in Canada. Photo at Wolverine Tube Division of Calumet & Hecla, Inc., Detroit, of COPPER TRUFIN® coils.



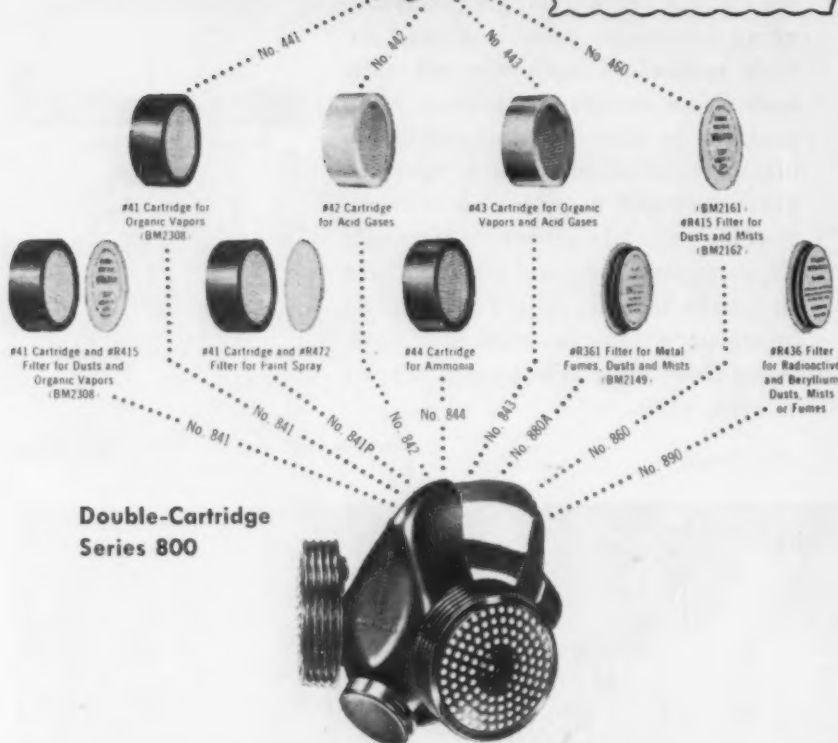
# NOW... WILLSON INTERCHANGEABLE RESPIRATORS

IN BOTH SINGLE AND DOUBLE CARTRIDGE STYLES!

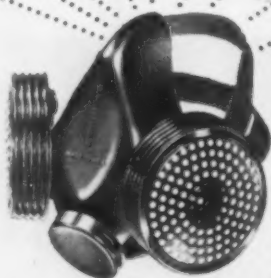
## Single-Cartridge Series 400



**NOTE:** The cartridges and filter shown for use in the Series 400 single-cartridge respirator are exactly the same as those used in the Series 800 double-cartridge respirator and can be used interchangeably in both. The other five cartridges, filters, and combinations are recommended for use only in the Series 800 respirator.



## Double-Cartridge Series 800



These Willson Respirators are the first truly interchangeable types in the field. Neither style requires additional parts or accessories to make use of the cartridges, filters, or combinations indicated to be used with them.

Write for bulletins describing these new Willson Interchangeable Respirators. Standardizing on them will give you the respiratory protection you want and simplify your inventory as well.

More than 300 Safety Products



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WILLSON PRODUCTS, INC., 231 Washington Street, Reading, Pennsylvania

## Free Technical Literature

Continued

faster and at lower cost. Fully automatic, its cutting mechanism is hydraulically powered and cuts lengths from  $\frac{3}{8}$  in. on up, and diameters from  $\frac{3}{8}$  in. to 2 in. With the Brehm cutter there is no stock cut away, no loss or waste. The Steel Products Engineering Co. For free copy circle No. 10 on postcard, p. 12.

## Grinding wheels

Catalog describing its reinforced resinoid line of grinding wheels has been made available by Norton Co. Included in this booklet are application photographs, tables of wheel sizes, prices, and operating speeds. Wheels discussed are Norton's BN type straight cutting off wheels; BD type hub wheel; BFR type reinforced hub wheel; and the BF reinforced straight wheels. Norton Co.

For free copy circle No. 11 on postcard, p. 12.

## Investment casting

Booklet, *Investment . . . For Economy . . . For Performance*, tells the story of precision investment casting and its advantages and limitations. A brief history of the investment casting process traces its progress to its present use in industry. Steps involved in investment casting are described from the first step of making the die to the completed casting. Pictures of the Hitchiner plant with explanatory captions show modern Precision Investment Casting methods from the building of dies to the inspection and gaging of the finished casting against order prints. Hitchiner Manufacturing Co.

For free copy circle No. 12 on postcard, p. 12.

## Cut-off wheels

A bulletin covering recommended specifications and wheel sizes for Manhattan reinforced foundry cut-off wheels includes photos showing Tabor and Fox cut-off machines equipped with Manhattan wheels. Manhattan's regular cut-off wheels and Moldiacs for portable rotary grinders are also described. Raybestos-Manhattan, Inc.

For free copy circle No. 13 on postcard, p. 12.

# LESSON IN STAYING PUT



## and Bonderite Makes Paint Stay Put on Metal

Paint doesn't stay put when applied to raw metal surfaces. But the same metal, treated with Bonderite, holds paint firmly.

Bonderite, Parker's corrosion resistant paint base, creates a tight phosphate coating, integral with the treated metal. The smooth, even coating provides a firm anchor for paint, resists corrosion and stops the spread of rust around scratches and breaks in the painted surface.

Literally thousands of metal products on the market today are protected with Bonderite. Automobiles, household appliances, business machines, metal furniture, electrical equipment, toys, and sewing machines are among the products treated with Bonderite. And their fine finishes last longer because of it.

Your painted metal products should have the added value, the added sales appeal, of Bonderite under the paint. Write today for full information!

\*Bonderite—Reg. U. S. Pat. Off.



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# PARKER

## RUST PROOF COMPANY

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**BONDERITE**  
corrosion resistant paint base

**BONDERITE and BONDERLUBE**  
aids in cold forming of metals

**PARCO COMPOUND**  
rust resistant

**PARCO LUBRITE**  
wear resistant for friction surfaces

July 22, 1954

129

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PRODUCTION  
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ESTABLISHED 1866  
**THE WHELAND  
COMPANY**  
CHATTANOOGA 2, TENN.

## Technical Briefs

Engineering

### Heat Treating:

Large gas caps are stress-relieved on assembly line.

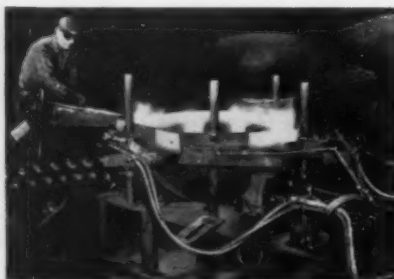
To relieve stresses built into large steel dome-shaped gas caps a novel assembly line setup is used by Lukens Steel Co., Coatesville, Pa. The line simplifies handling of bulky parts through the gas flame heating machine.

Fabricators of high-pressure steel tanks used to store liquified petroleum (LP) gas have had trouble from cracks appearing along the rims of hemispherical heads forming the ends of these tanks. For economical reasons, these heads are cold-pressed. Cold working leaves the area along the rim comparatively brittle.

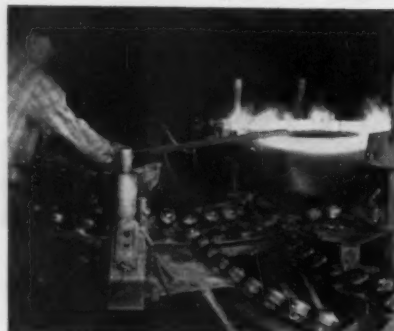
#### Stress Relieve Rims

A hard bump or rough handling during assembly operations often caused cracks to appear. Problem was to turn out a cold-worked, dome-shaped "gas cap" without a highly stressed rim.

After a thorough study an unusual assembly-line technique of stress-relieving rims on cold-worked domes was devised.



Burners heat rim . . .



Ready to move out . . .

### IF YOU WANT MORE DATA

You may secure additional information on any item briefed in this section by using the reply card on page 127. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

### Carbides:

Form tools cut costs, improve finish on stainless.

By using carbide form tools one company has improved finish, increased production and cut tool costs in machining type 316 stainless.

#### Use Flat and Dovetail Tool

Machining jet motor exhaust bosses from 2 $\frac{3}{8}$ -in. OD type 316 stainless stock presented some problems for Marcus Mason & Co. Inc., Westboro, Mass. Original form tools could not provide the required 30 microinch finish, necessitating additional operations.

Cutting edges dulled rapidly and extensive tool changing limited production to about two pieces per hour.

Carbide form tools were tried. A dovetail style tool was used for rough turning and a flat form tool for finish forming. Various grades of carbide were tested and records made of tool life obtained.

#### Reduced Downtime

Kennametal Grade K4H gave 100 pieces per grind on roughing and 175 pieces per grind on finishing. The greater number of pieces per grind and reduced downtime helped cut costs.

In both roughing and finishing, K4H produced a 25 microinch finish, eliminating a secondary operation. Production was stepped up to 12 pieces per hour and tool cost reduced from 12 $\frac{1}{2}$  to 3 $\frac{1}{2}$  cents per piece.



## Welding:

Permanent magnets hold fan hub in position for welding.

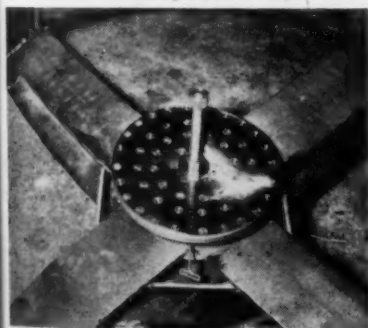
A simple and efficient holding device for welding can be made from permanent magnets. They are being used by the American Blower Corp., Dearborn, Mich.

Welding vane assembly of fans up to 7 ft in diam may produce an unbalanced fan if there is any movement of parts during the operation. This problem seemed to revolve around the vane hub, so American Blower jig and fixture men attacked the crux of the matter with permanent magnets.

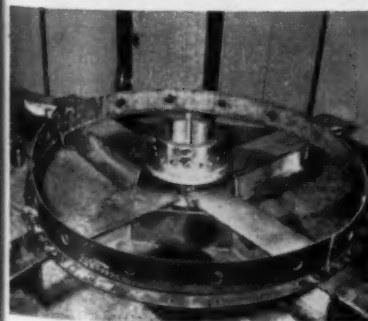
### Drill Plate For Magnets

Mounting a 16-in. circular steel plate at the center of crossed I-beams, they drilled the plate for fifty-eight 11/16-in. diam permanent magnets.

The magnets manufactured by Carboly Dept. of General Electric Co., Detroit, of the highest energy material commercially available were installed in the plate. These were insulated from the plate by aluminum.



Magnet plate in position . .



Hub centered on plate . . .

You Save Time and Money  
When You Rely On "STANDARD CONVEYOR"

# EXPERIENCE

• The range, versatility and flexibility of Standard Conveyor equipment have been developed in more than 45 years of service to business and industry. You can rely on Standard Conveyor for the right type of equipment to best serve your needs.



## For Production • Assembly • Packing Lines • Roller and Belt Conveyors



• To keep things moving—on production, assembly, processing or packing lines—mechanize your handling with conveyors. Standard furnishes all types—power and gravity, belt, roller, slat, chain, push-bar, sectional. Write—address Dept. IA-113.

## For Storage • Shipping • Receiving Depts. EXTENDOVEYOR portable Conveyors



• Compact, mobile, self-contained powered belt conveyor. Work it like an accordion—make it long or short—slope it up or down. Easily maneuvered in confined areas. Handles commodities up to 150 lbs. Write for Bulletin—address Dept. IA-113.

## For Lifting or Lowering • Floor to Floor

### the INCLINEBELT



• Move packages up or down from floor to floor continuously. Compact, simple to install and maintain. High continuous line load capacity for any floor elevations, belt widths of 8, 12, 14, 18, 24, 30 and 36 inches. Write for Bulletin 63-D, address Dept. IA-74.

Send for Bulletin 63-D describing the above and other Standard Conveyor equipment. Address Dept. IA-74.



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## Townsend Saves Servel \$14,624 On Part For Electric Room Air Conditioner

The many luxury features you enjoy with Servel's electric room air conditioner stem from careful attention to every detail of design and assembly. This enables Servel to provide the benefits of better health and greater comfort in an efficient, moderately priced unit.

This is possible because no part is too small to be thoroughly analyzed as to function and cost. For example, the part shown here is one of the reasons for the efficient assembly of the unit. Four of them are used to mount the compressor, hold it securely in position to help assure smooth, quiet performance.

Until a Townsend engineer devised this improved part, Servel used an expensive machined part. It was cut from a hexagon bar, tapped to receive a bolt which was held in place by a lock washer.

The part as redesigned by Townsend is made in one piece by cold-forming—threads are rolled for greater strength and accuracy. The bolt was eliminated and replaced with a nut and lock washer in the assembly. Scrap loss was cut to virtually zero. The Townsend part is stronger and just as accurate. Annual

savings amount to \$14,624. Servel effects a big reduction in overall costs—at the same time produces a unit that is jam-packed with quality and performance.

This is merely one example of how the Townsend method of producing fasteners and small parts saves thousands of dollars annually for cost-conscious manufacturers in many industries. On material alone, other companies save from \$3.00 to \$125 per thousand pieces—have reduced assembly time and improved their products as well.

In addition to making the best possible products, Townsend has the versatility to produce regularly more than 10,000 special and standard types. It has the capacity to produce these items in tremendous quantity—60 million every day.

This all adds up to why Townsend has become known as "The Fastening Authority"—a reliable source of quality fasteners at reasonable cost. To learn more about the possibilities of new economies in your operation, write for Bulletin TL-89. Or send samples or sketches of the parts you wish improved and we will have one of our engineers call to discuss your problem.

# Townsend

COMPANY • ESTABLISHED 1816

NEW BRIGHTON, PENNSYLVANIA

Sales Offices in Principal Cities

Cherry Blind Rivets - Santa Ana, California

**THE FASTENING AUTHORITY—Experience:** over 138 years—**Capacity:** sixty-million parts daily—**Products:** over ten-thousand types of solid rivets—cold-headed parts—Cherry Blind Rivets—Twinfast Screws—self-tapping screws—tubular rivets—locknuts—special nails—formed wire parts.

**Plants:** New Brighton, Pa.—Chicago, Ill.—Plymouth, Mich.—Santa Ana, Calif.

**In Canada:** Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario

### Technical Briefs

## Milling:

**Three spindle head cuts costs of milling slots.**

A 3-spindle milling head has been developed to simplify cutting of slots and grooves. A chief advantage is the ability to mill slots in one pass. As much as 57 per cent less time is required to mill T slots than is necessary with a standard single spindle setup, it is claimed.

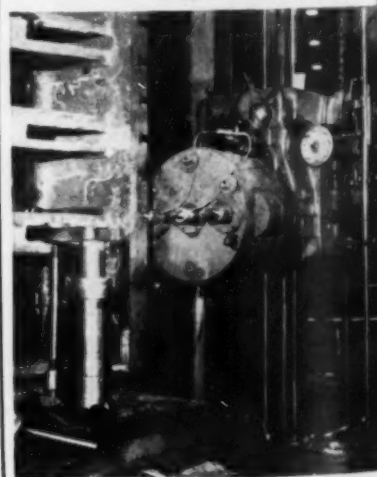
Two plants have reported successful use of the Rock Milling Head, made by Rockenfelder Industries of Strasburg, Ohio. Blum Mfg. Co. is using the head for milling of cast iron. Federal Machine & Welder Co. at Warren, Ohio, is using the head for milling steel.

### How It Works

What the milling head does is to line up three spindles in one head. One spindle is at the center of the head and the other two at the ends of a diameter of the head. When set up with spindles in line, a series of cutters may be used to completely machine in one pass an opening such as a T slot.

When the milling head is rotated, the cutting edges of three milling tools may be presented to the work. This permits milling of a single wide slot, or three separate slots in one pass.

Maximum center distance between outside spindles is 14 in. Maximum center distance between each of three spindles is 7 in. Intermediate distances are obtained by rotation of the cutter head.



... Cutting feed is 2 ipm

## Technical Briefs

### New Films:

Shorts dramatize company story, aid in training programs.

"Steel Tubes for Industry," a 16 mm, color movie, with sound, presents a short course in manufacture of steel tubing. Animated drawings detail tube drawing and tube reduction operations. The film was produced by Pacific Tube Co., manufacturers of several types of steel tubing. Available without charge, on request, from Pacific Tube Co., 710 Smithway St., Los Angeles 22.

"The Builders," a 16-mm sound film sponsored by the Wire Reinforcement Institute, Inc., tells the story of how welded wire fabric is used in this country for reinforcement of highways, buildings and concrete pipe. The film runs 31 minutes, in color with sound. It may be obtained free, except for mailing costs, from Modern Talking Picture Service, Inc., 45 Rockefeller Plaza, New York 20.

"New Horizons in Aluminum Brazing." This demonstration and explanation of the latest light-metal brazing technique offers the viewer a comprehensive glimpse of the advantages that brazing provides in the design and fabrication of aluminum products.

The 16-mm film outlines methods used by Alcoa's research laboratories in helping manufacturers adapt brazing to their production. Motion Picture Section, 854 Alcoa Building, Pittsburgh 19, Pa.

"Making the Most of the Spray Painting Method." This 16-mm film illustrates the four basic principles of spray finishing. Equipment, training and actual spray jobs are shown in film. Film also points out that spray gun is a precision-built instrument which has been precision machined to give perfect atomization for the application of sprayed materials. Maintenance section of film covers air compressor and all related equipment. De Filbi Co., 300 Phillips Ave., Toledo 1, Ohio.



## Townsend Saves Manufacturer \$4.12 Per Thousand Pieces On This Part

A Midwest appliance manufacturer has improved his line of electric sweepers and at the same time reduced unit costs by having this part made by the Townsend method. Before a Townsend engineer suggested this change, the part was machined from bar stock. The process was slow and considerable metal was wasted as scrap with the result that it cost \$4.12 per thousand pieces more than this Townsend cold-formed part.

Cold-forming is a fast, accurate method of mass producing quality parts and fasteners. Its economy stems from the combination of speed and elimination of wasted metal. The extra quality comes from the increased strength gained by cold forging and the fact that Townsend draws its own wire to assure close size accuracy and excellent surface finish.

The versatility of the Townsend method also gives you design advan-

tages that permit eccentric shapes, wings and offsets to be formed when the piece is upset or extruded. It may then be drilled, flattened, slotted, knurled, threaded, pointed, punched, bent, trimmed or machined.

Townsend makes parts and fasteners in carbon, alloy and stainless steels—in brass, bronze, copper, and aluminum—in a variety of platings and finishes.

As "The Fastening Authority," Townsend is known in all industry as a dependable source of quality fasteners and parts. It has the capacity to produce 60-million pieces daily—makes more than 10,000 standard and special items which are used to fasten metal, plastics, wood, fabrics and glass together quickly, economically, permanently. To learn more about the economy of the Townsend method, write for Bulletin TL-89 or use the coupon below.

THE FASTENING AUTHORITY

# Townsend

COMPANY • ESTABLISHED 1816

Sales Offices in Principal Cities

In Canada: Parmenter & Bulloch Manufacturing Company, Ltd., Gananoque, Ontario

TOWNSEND COMPANY  
Sales Department  
New Brighton, Pa.

Please send without obligation "Special Cold-Formed Fasteners and Small Parts" Bulletin TL-89.

Name \_\_\_\_\_ Title \_\_\_\_\_  
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Put  
**DiesElectric** efficiency  
into your  
materials handling  
operations, too!

**Switch to American DiesElectric Cranes**

Let's face it . . . generally, steam is obsolete. High maintenance cost, high labor cost, in efficiency, has sealed its fate. That's why most construction forces insist on American DiesElectric Locomotive Cranes to put DiesElectric efficiency into their materials handling operation! We can prove that American DiesElectric Loco-

motive Cranes with DiesElectric power to the deck, electric power to the trucks write off their cost in a few short years! But, seeing is believing. Write us today for full facts!

**American Hoist**

American Hoist & Derrick Co. St. Paul, Minnesota

May 17, 1954 RAILWAY AGE

## "Why are we *still* using steam cranes?"

Good question! One that more and more cost-conscious executives are asking themselves. The answer? A switch from obsolete steam power to American DiesElectric efficiency for these very good reasons: lower maintenance cost, lower labor cost and greater efficiency. Operating records prove that the American DiesElectric

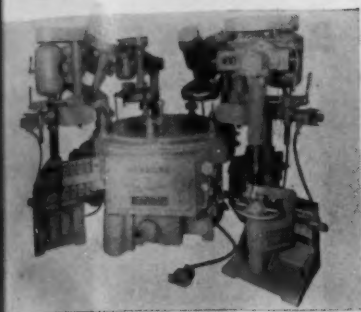
Locomotive Crane writes off its cost in a few short years. We will be happy to work out your materials handling problems with you. Write us today.

### **American Hoist**

American Hoist & Derrick Co. St. Paul, Minn.

# NEW EQUIPMENT

New and improved production ideas, equipment services and methods described here offer production economies . . . for more data use the free postcard on page 127 or 128.

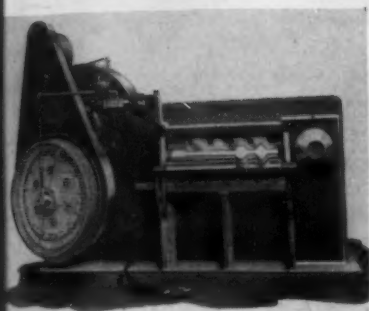


## Rotary polishing machine can use six units

A larger rotary automatic indexing, polishing and buffing machine will accommodate up to 6 head and stand units. The indexing turret is 62 in. OD and 42 in. high from floor to top of spindles. The machine operates on a constant high speed index movement of 1 sec and has an adjustable dwell period. Op-

erating range is 150 to 1700 indexes per hr. Table work spindles are driven by a  $\frac{3}{4}$  hp motor and are variable speed of 15 to 45 rpm or 50 to 150 rpm and operate entirely independent of the indexing operation of the machine. *Hammond Machinery Builders.*

For more data circle No. 27 on postcard, p. 127.

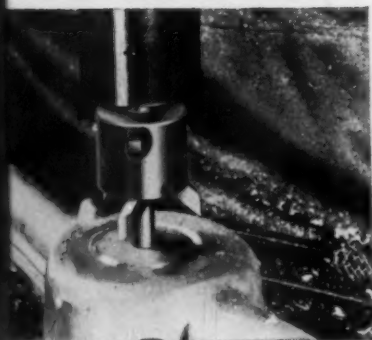


## Makes heavy cuts with a small input of power

Design of a billet shear for production cutting of metals in rounds, squares, flats, angles, channels, I beams and special shapes employs the principle of the lever and mechanical advantage to make heavy cuts with a small input of power. Heavy cutting is done near the fulcrum point of the lever arm

with a mechanical advantage of approximately 5 to 1. The Canton billet shear will mount 36-in. long knives, making for greater versatility in the types of material cut. Knife seat construction permits quick setting of blades without shimming. *Hill Acme Co.*

For more data circle No. 28 on postcard, p. 127.



## Hole-maker solves difficult hole cutting

Totally new tool design for hole making operations is found in the Hole-Maker which can be used in steel, cast iron, aluminum and its alloys. High efficiency is insured by grinding correct clearance angles on bits and using proper cutting speeds and feeds for each respective metal. The tool produces clean, true holes in all thicknesses

between heavy plate and skin-type materials; may be applied to cylindrical or crowned shapes. Due to three-bladed design at least one bit remains in constant contact with the work, even on curved surfaces. Each bit is adjustable within its tool slot. Sizes cover from 1 to 6 in. diam. *Robert H. Clark Co.*

For more data circle No. 29 on postcard, p. 127.



## Plastics molding press molds 2½ oz per shot

Model H-250, a 2½-oz capacity fully-automatic press will plasticize over 22 lb of material per hour, and attain up to 720 cycles per hour (dry run). Water cooling of the injection plunger, transfer hopper and oil cooler contributes to the high efficiency of the press. For greater safety, the mold hydraulic mechanism makes the press non-

operative unless the molded part is completely ejected. Automatic adjustable material metering device insures simplicity of operation. Purging to change material or color is easy due to accessibility of a simple platen clamp device. *Van Dorn Iron Works Co.*

For more data circle No. 30 on postcard, p. 127.

Turn Page

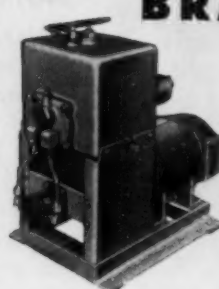
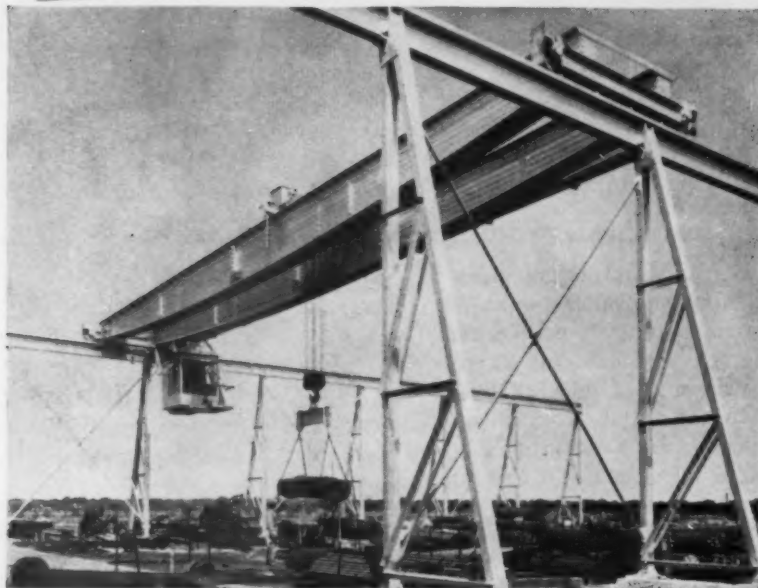
**Wagner®**  
CRANE-BRIDGE BRAKES  
...the choice of leaders  
in industry

# Stop Overhead Cranes

## EASILY—SAFELY—WITH

# Wagner

## Powered Hydraulic CRANE BRIDGE BRAKES



Hydraulic power unit  
driven by totally-  
enclosed motor



Type H  
or HM2  
Brake Unit

Hydraulic braking systems for overhead traveling cranes—pioneered by Wagner—have become an industry standard.

Now, Wagner offers *Powered Hydraulic Crane Braking* for safer, more efficient operation where frequent starts and stops are necessary... where close spotting is required... where heavy equipment is involved... and for any application where exceptional ease of brake operation is desired.

Wagner Powered Braking Systems save you money because they lengthen the life of your equipment. Operators don't drag brakes and unnecessarily wear wheels and lining—cranes can be controlled without bridge motor plugging with its resultant damage to both motor and gears.

These Power Units can be added to your present Wagner Hydraulic System. Only six weeks are required to fill the average order. Bulletin IU-36 gives full details—write for your copy today.



**TIP TOE  
BRAKING**

With Wagner Powered Brakes, tons of weight can be stopped by the touch of a toe. Loads can be spotted accurately—production can be stepped up—several brakes can be operated from one pedal.



**FINGER TIP  
PARKING**

On the Wagner Type HM-2 System, a button operated spring-set brake permits safe parking, easily controlled by the crane operator. The parking brake also sets automatically, to bring the crane to a gradual stop in case of power failure.



**ONE MINUTE  
BLEEDING**

The Wagner Remote Control Bleeder permits the operator to keep the hydraulic system filled with air-free fluid for maximum efficiency. Bleeding the system is a one man job—the operator need only press a push button and pump the foot pedal several times.



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6403 PLYMOUTH AVE., ST. LOUIS 14, MO., U.S.A.

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ELECTRIC MOTORS  
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INDUSTRIAL BRAKES  
AUTOMOTIVE  
BRAKE SYSTEMS—  
AIR AND HYDRAULIC

THE IRON AGE



## New Equipment

Continued



### Standardized gage checks hole locations

Hole locations and hole concentricities can be checked with accuracy by a standardized hole location gage. These precision instruments satisfy two gaging requirements: location or alignment of the hole in the workpiece with respect to another hole, a surface, or a predetermined reference; concentric-

ity of a hole with another finished hole. A master fixture with a precision bore is built that will enable a relationship to be established between the bore in the fixture and hole in the part. In a package deal Federal supplies the fixture design and the gage. *Federal Products Corp.*

For more data circle No. 31 on postcard, p. 127.

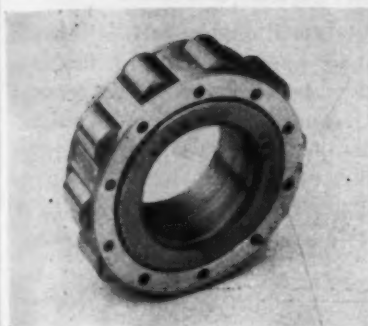


### Magnetic fanner separates light sheets

To facilitate faster and safer handling of thin gage metal blanks, tinplate, can lids, etc., a magnetic sheet fanner is designed for optimum performance in separating very lightweight stock. Placed adjacent to a stack of can lids, the powerful permanent magnetic unit induces like polarity in the lids,

causing them to repel each other to such a degree that the upper pieces in the pile tend to rise in the air and are sustained there, separated from one another. As each piece is taken from the top of the pile, others below it automatically move up. *Eriez Mfg. Co.*

For more data circle No. 32 on postcard, p. 127.



### Uses transmission stem gear as outer race

This MS type cylindrical roller bearing supports one end of a truck transmission main shaft. Because the bearing runs directly in the bore of the main shaft stem gear, no outer race is required. The stem gear is hardened and ground to the same hardness and finish as a normal bearing outer

race. Space saving resulting from removal of the outer race allows the use of a larger roller assembly, which increases the bearing's load-carrying capacity and prolongs the transmission's operating life. The roller bearing has chrome steel inner race. *Rollway Bearing Co., Inc.*

For more data circle No. 33 on postcard, p. 127.

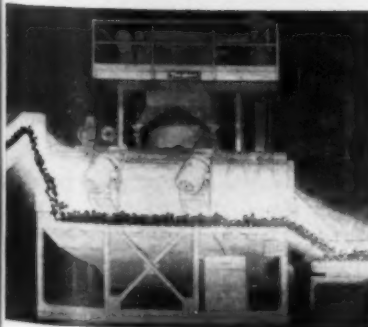


### Welding without torch or arc

Remarkable strength and ease of handling is claimed for Tygoweld, an organic welding material. Metal to glass, metal to porcelain, and metal to metal adhesion is said to surpass rugged peel and shear tests. The welding technique does not require open flame or arc. Tygoweld comes in rod form and can

be applied with moderate heats and little or no pressure. Powder and paste adaptations of this new material are available. Special color and filleting characteristics widen range of its possible applications. Curing time varies by heat applied. *U. S. Stoneware Co.*

For more data circle No. 34 on postcard, p. 127.



### Continuous-flow cleaning barrels in 5 sizes

Continuous-Flow Rotoblast cleaning barrels range in size from the No. 1 with 48 in. diam drum to No. 5 with 72-in. diam drum. Because of their high cleaning capacity, the barrels are best suited to heavy volume cleaning operations for maximum economy. A factor in the efficient operation of

the barrels is the abrasive separation system. Barrels are equipped with abrasive reclaiming systems which thoroughly clean the abrasive for reuse, retaining full blasting efficiency, discarding all fines and other refuse. *Pangborn Corp.*

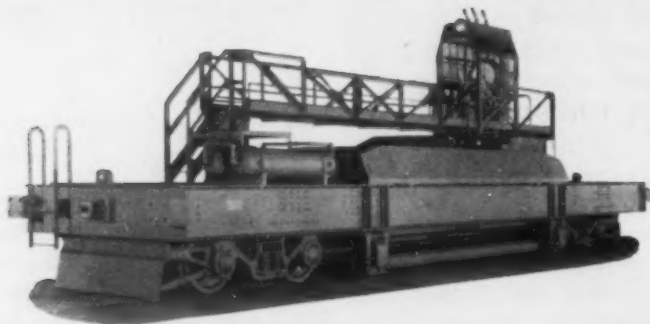
For more data circle No. 35 on postcard, p. 127.

Turn Page

Time has proved . . .

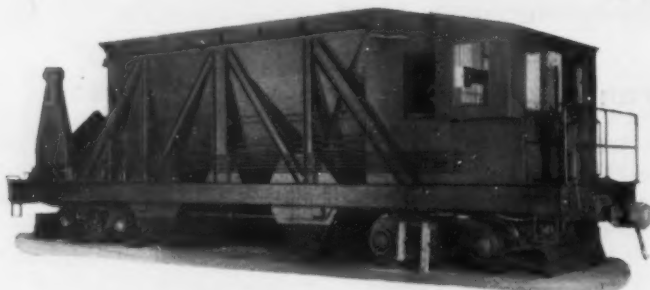
# ATLAS

**Builds Dependable Equipment**



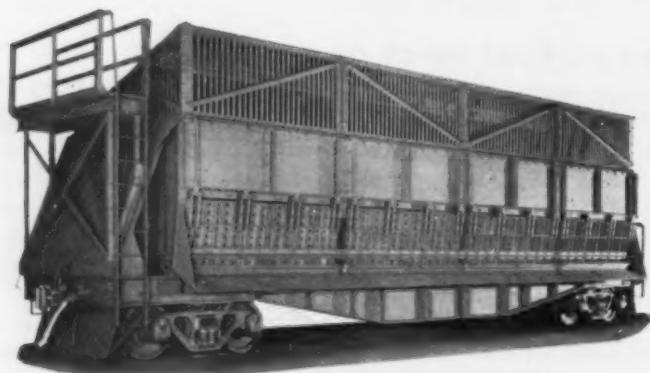
30 Ton Double Hopper Bottom Scale Charging Car. Operator's platform is above hopper to facilitate bin operation.

## SCALE CARS



## ORE TRANSFERS

60 Ton Center Bottom Dump Ore Transfer Car. Equipped with pneumatically operated balanced type pusher arm.



Coke Quenching Car. Motor-operated cast steel discharge gates. Bottom, ends and front are abrasive resistant steel plates.

## COKE QUENCHERS



**THE ATLAS CAR & MFG. CO.**

ENGINEERS

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1140 IVANHOE RD.

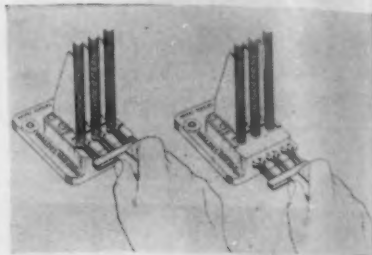
CLEVELAND 10, OHIO, U. S. A.

## —New Equipment—

Continued

### Ring dispenser

Triple-stack retaining ring dispenser automatically feeds three Waldes Truarc crescent or E-shaped rings at one time. The

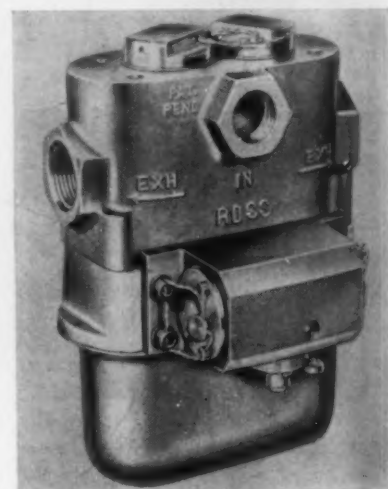


rings are withdrawn by a special applying tool with three fork heads set in a handle. Both must be engineered for individual applications. The unit saves time and motion and lessens operator fatigue. *Waldes Kohinoor, Inc.*

For more data circle No. 36 on postcard, p. 127.

### Lifeguard valve

An exceptional degree of safety in press operation is provided by a new air control valve. Aptly named Lifeguard, it senses valve malfunctioning and shuts itself off when any component does not operate normally. A cutoff unit attached to the pilot section casting cuts off

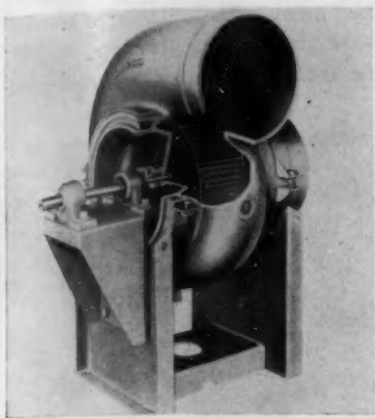


the air supply to the pilot section in case of failure of any valve part. The valve cannot be re-actuated until an authorized safety engineer breaks the seal on the recock unit, inspects the valve and makes necessary adjustments or replacements. *Ross Operating Valve Co.*

For more data circle No. 37 on postcard, p. 127.

## Exhaust fans

Corrosion resisting exhaust fans feature all metal resistance to corrosive fumes and gases. The casing is Duriron, said to be a most corrosion resistant material. The rotor is a multi-blade, forward



curved design of Durimet 20, a high nickel stainless steel. These Durco B Series fans are available with capacities at 8000 cfm; are 40 pct lighter than former Duriron fans. *Duriron Co., Inc.*

For more data circle No. 38 on postcard, p. 127.

## Hydraulic lift table

New type hydraulic lift table has a 2000 lb capacity with a 3000-lb hydraulic unit capacity. Table is 29 in. long x 19 in. wide; has a rise from 30 in. low to 48 in. high. It makes an excellent positioning

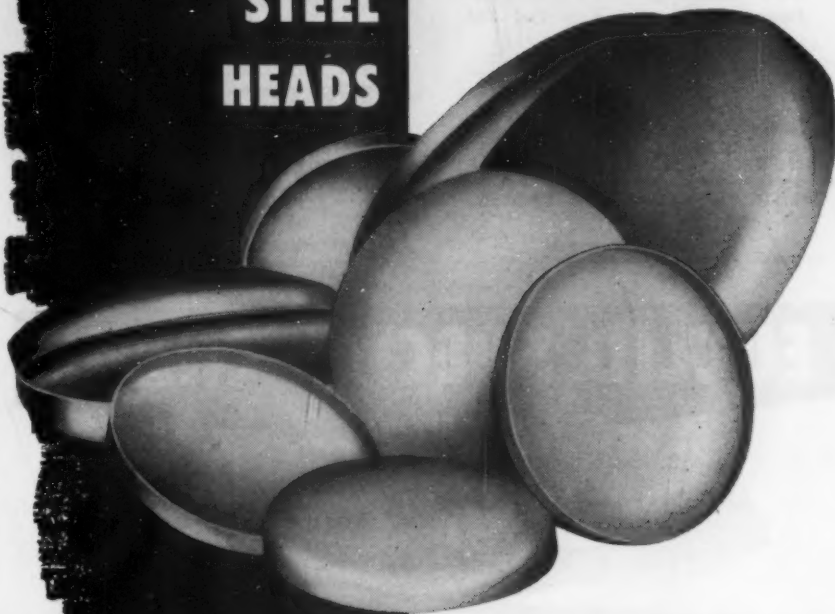


table for welding or an adjustable work bench for many operations; useful to transport heavy dies and castings to presses or milling machines and then raise them to desired height. Heavy duty casters make it easy to maneuver in crowded spaces. *W. J. McElmoyl Co.*

For more data circle No. 39 on postcard, p. 127.

Turn Page

# "Heads-up" Service in STAINLESS STEEL HEADS



Fabricators rely on G. O. Carlson, Inc. for stainless steel heads produced to exact specifications and for other components of stainless steel tanks. Shells, flanges, rings, pads as well as spun or press-formed heads are readily available as a packaged service. This eliminates the need of multiple ordering from several suppliers and places responsibility in the skilled hands of Carlson specialists.

Carlson stainless steel heads are produced in a wide range

of sizes and gauges to ASME and standard specifications. Many styles of forming dies are available. There's an up-to-date folder describing these dies—write for your copy now!

**G.O. CARLSON, INC.**  
Stainless Steels Exclusively  
Plates • Plate Products • Forgings • Bars • Sheets (No. 1 Finish)

THORNDALE, PENNSYLVANIA

District Sales Offices in Principal Cities

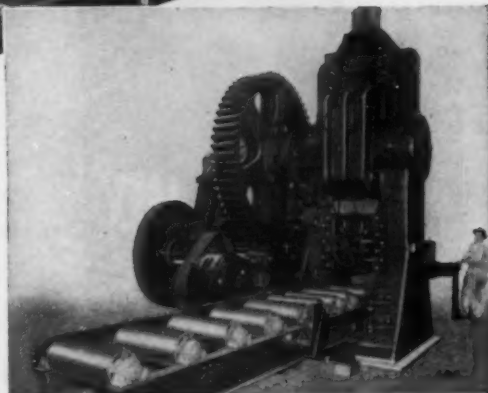


# THOMAS Heavy Duty

## BILLET SHEARS

*for long and  
distinguished  
service*

3A



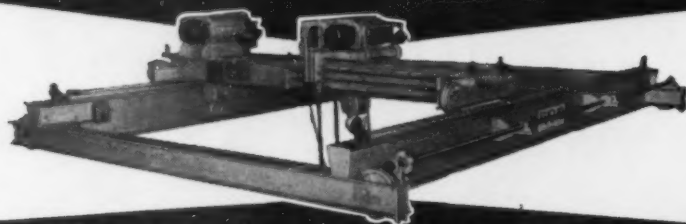
THOMAS Heavy Duty Billet Shears are built in capacities from 500 to 2000 tons, with the primary objective of delivering to the user many years of efficient, trouble-free service. And they do!

Write for Bulletin 311

PUNCHES • SHEARS • PRESSES  
BENDERS • SPACING TABLES

**THOMAS**  
MACHINE MANUFACTURING CO.  
PITTSBURGH 23, PA.

## EUCLID SPECIAL CRANE



a composite of proven STANDARD UNITS

As a rule a "special" Euclid Crane embodies *standard* hoisting, traveling and control units combined with scientifically engineered bridge, trolley, etc.

The purchaser obtains a crane with a full factor of five, thoroughly tested and proven components, the economy of volume production and the assurance of satisfactory performance due to years of specialized experience.

The above crane has a rigidly mounted hoist and hook; also a hoist and trolley which travels lengthwise of a secondary bridge. This permits convenient and efficient handling of bundled material of various lengths.

Write us for a recommendation mentioning conventional or special requirements.



**THE EUCLID CRANE & HOIST CO.**

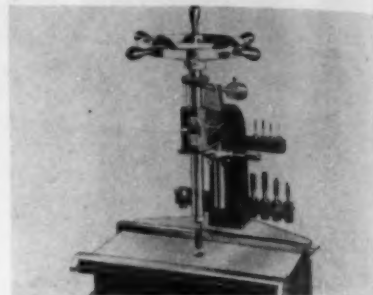
1361 CHARDON ROAD • EUCLID, OHIO

## New Equipment

Continued

### Spindle balancing

Lassy hand tapping machines are equipped with a new spindle balancing device that offsets the weight of the spindle assembly and operator's hand. The balancing attachment is adjustable to compensate for various size taps and differential in the operator's hand



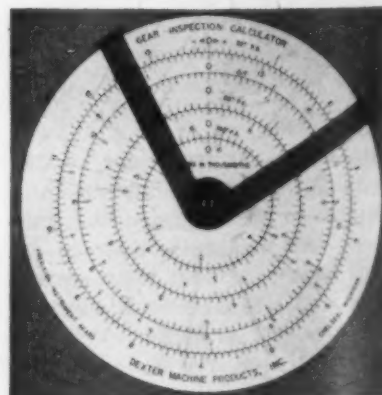
pressure. The balance weight is set so that a slight downward pressure starts the tap cutting, allowing tap, when retracted, to float free, leaving top thread undamaged. The free floating action achieved is said to produce good fits, lengthens tap life and eliminates broken taps due to jamming. Lassy Tool Co.

For more data circle No. 40 on postcard, p. 127.

### Gear calculator

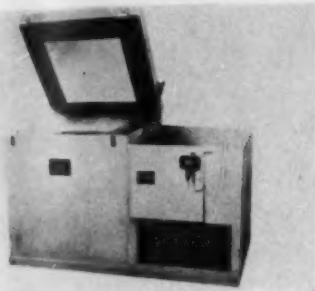
Handy gear inspection calculator determines the relationship between tooth thickness and radial displacement and total composite error for pressure angles of 30°, 20°, and 14½° when the gear is inspected on a gear rolling fixture. Dexter Machine Products, Inc.

For more data circle No. 41 on postcard, p. 127.



## Cold treatment units

Featuring rapid temperature pull-down, new cold treatment units operate within a range from 60° to 170° F. Semi-hermetic compressors are standard on all models, and fan and coil arrangement permits air circulation within the cold

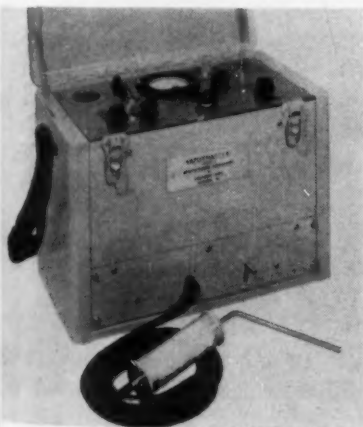


chamber. Compactly designed and lightweight, the units are ruggedly built to withstand hard usage. Caster assembly which is available for portable operations simplifies the movement of this equipment to various parts of the plant. *Technical Refrigeration.*

For more data circle No. 42 on postcard, p. 127.

## Gas detector

Vapormaster detects presence of gas by absorption method of ultraviolet light. When air being tested comes in contact with ultraviolet beam of the instrument, the reduc-



tion in intensity of ultraviolet light determines concentration of gas present in air. The degree of gas concentration is registered automatically in a dial of the instrument. *Manufacturers Engineering & Equipment Corp.*

For more data circle No. 43 on postcard, p. 127.

Turn Page

## FOLLANSBEE POLISHED BLUE

## UNIFORM QUALITY AND COLOR

*shipment after shipment*

*after shipment!*

The intense, lustrous surface finish of Follansbee Polished Blue Strip makes it a desirable material for products which can be marketed without further finishing—products such as heaters, stoves, and many others.

Follansbee Polished Blue Strip is furnished in continuous coils for use in automatic press operations, with uniform strip gauge tolerances and the comparable physical and metallurgical specifications of Follansbee Cold Rolled Strip.

You can see the quality of Follansbee Polished Blue Sheets and Strip in the lustrous, uniform color, the smooth, highly polished surfaces. In every operation—pickling, rolling, annealing, blueing, polishing—Follansbee experience and high standards contribute to the making of the finest Polished Blue Sheets and Strip.

You're sure of the best when you specify Follansbee Polished Blue . . . and you can rely on Follansbee with equal certainty for all Cold Rolled Strip requirements in the number 1 and 2 finishes. Check with your Follansbee Steel representatives for prompt service in adapting his products to your special needs.

## FOLLANSBEE STEEL CORPORATION

General Offices, Pittsburgh 30, Pa.

Polished Blue Sheets and Coils Cold Rolled Strip  
Seamless Tonne Roll Roofing

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee, Chicago, Indianapolis, Kansas City, Nashville, Los Angeles, San Francisco, Seattle, Toronto and Montreal, Canada. Plants—Follansbee, West Virginia

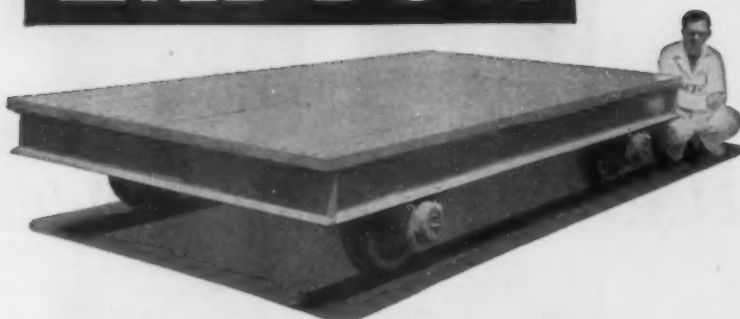
FOLLANSBEE METAL WAREHOUSES

Pittsburgh, Pa. Rochester, N.Y. Wallingford, Conn.



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A-1043



## Platform Cars

Single and double-truck to any desired capacity

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special  
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orite features.

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## New Equipment

Continued

### Shaft retainers

Easier and more economical appli-  
cation with positive holding power  
are advantages claimed for new  
Plasti-Ring shaft retainers. They  
are injection molded of oil-and-  
grease-resistant vinyl, with high

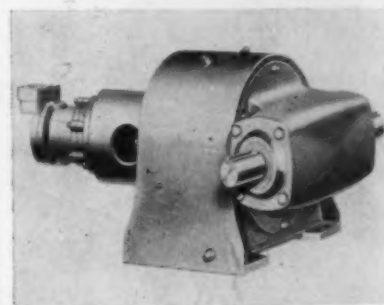


friction resistance and long wear-  
ing qualities. Plasti-Rings are  
easily rolled into a prepared groove  
to serve as a positive-holding  
shoulder, highly resistant to fric-  
tion and wear. *Shakeproof, Div.  
of Illinois Tool Works.*

For more data circle No. 44 on postcard, p. 127.

### Output units

Oilgear's type H fluid power, con-  
stant displacement, axial piston  
motors and Falk's concentric and  
right angle all-steel reducers are  
combined into a new line of in-  
tegral Oil-gearreducers, compact out-  
put units for Oilgear variable  
speed drives. Motors in sizes 1,



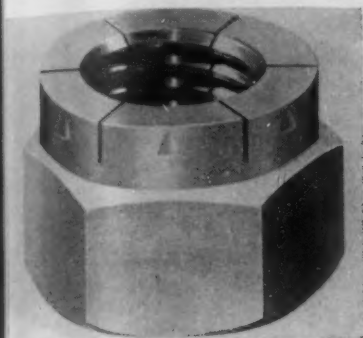
3, 8, 12 and 20 hp are flanged and  
resilient coupling connected to  
single, double, triple or quadruple  
reducers with ratio combinations  
providing maximum output speeds  
from 1.7 to 1170 rpm. Normally  
continuous output torques ranging  
from 42 to 41500 lb-in are based  
on pressure of 1100 psi; can be  
60 pct higher for intermittent ser-  
vice. *Oilgear Co.*

For more data circle No. 45 on postcard, p. 127.



## Aluminum locknut

An all-metal, self-locking nut has been developed out of 24 ST aluminum and meets or exceeds minimum tensile requirements for steel nuts. It weighs 65 pct less than steel. The aluminum Flexloc is



for use on steel bolts or studs in place of steel nuts wherever weight is a factor and temperatures do not exceed 250° F. The lightweight nut is designed to Spec AN-N-5b, is chemically treated against corrosion and blue-dyed for identification. *Standard Pressed Steel Co.*

For more data circle No. 46 on postcard, p. 127.

## Open link belt

New open link design makes a conveyor belt readily adaptable to annealing, normalizing, stress relieving, and draw furnaces where circulation of the heat in the furnace is essential. The belt conveyor



is available in regular widths from 18 to 60 in. and is adaptable to comparatively long spans, operating in temperatures of 1800°F. Extra heavy hinge sections assure extra bearing surface for longer life. The solid link belt can be used with standard Alloy drums, and rail and roller supports. The open type link has the advantage of rugged design and has extra heavy hinge sections. *Standard Alloy Co., Inc.*

For more data circle No. 47 on postcard, p. 127.

# Distortion is Controlled in BRAD FOOTE'S **DEEP CASE HARDENING**

The **BRAD FOOTE**  
**DEEP CASE HARDENING** process has been perfected  
to a degree which practically eliminates distortion



## GEARS RUN TRUE

No place is distortion control more important than on heavy duty gears which are run almost continuously at full rating and subjected to extreme shock loads such as are encountered in rolling mill operations. **BRAD FOOTE DEEP CASE HARDENED** gears run true and distribute the load evenly across the full face and on the designed bearing surfaces of each tooth.

## HARD TOOTH SURFACES

In addition, **BRAD FOOTE** rigidly controls to set standards the depth of **DEEP CASE HARDENING** and the carbon content. The tooth surfaces are of maximum hardness for long life, but the carbon content is gradually diminished at successive depths below the surface until it blends to the metal of the core itself.

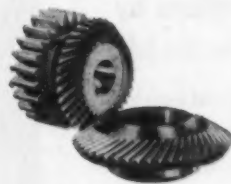
## SHOCK-RESISTANT CORES

Thus the cores of the teeth and the body of the gear remain ductile and shock-resistant while the teeth are given an increase in service life of over 50%.

## ASK FOR QUOTATION

It will pay you to try a set of these gears on your toughest job. Send your specifications today for quotation.

**BRAD FOOTE** makes Spur  
Bevel  
Helical  
Spiral Bevel  
Herringbone  
Zero  
Worms  
Worm Gears  
Reducers  
Transmissions



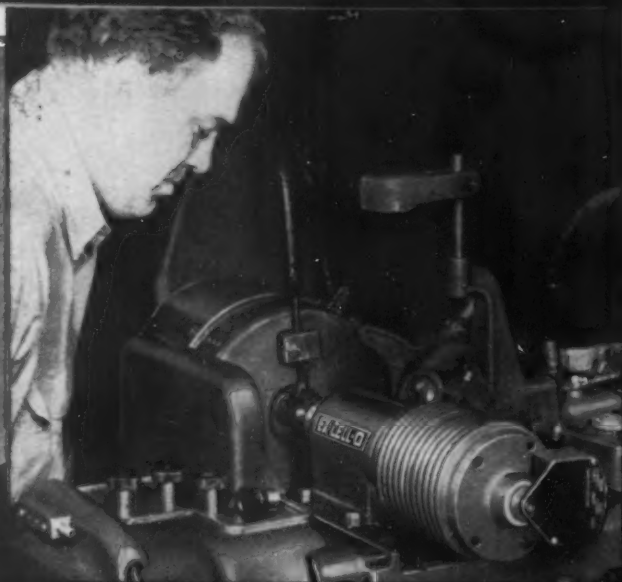
## BRAD FOOTE GEAR WORKS, INC.

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Bishop 2-1070 • Olympic 2-7700 • TWX: CIC-2856-U

### subsidiaries

**AMERICAN GEAR & MFG. CO.**  
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25,000 RPM High Frequency Motorized Spindle

## PRECISION SPINDLES

*Built for Your Work*



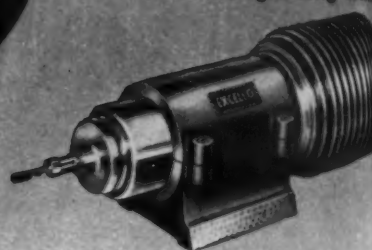
Single-body, belt-driven  
internal grinding spindle.



Double-body, belt-driven  
internal grinding spindle.



25 hp heavy duty precision  
with 24" grinding wheel



25,000 rpm high frequency  
inbuilt motor spindle.



Totally enclosed inbuilt motor  
surface grinder spindle.



Precision inbuilt motor  
spindle for cutter grinder.

Heavy duty motorized  
precision spindle  
available up to 20 hp



Get the most from your precision grinding operations by  
using the Ex-Cell-O Spindle that's made especially for the job.

Ex-Cell-O Precision Spindles have long been the original equipment choice of leading grinder manufacturers. They are rigid and smooth-running. For high precision work they are fitted with standard Ex-Cell-O Precision Ball Bearings; for slower speeds and heavier cuts they are equipped with heavy-duty Ex-Cell-O Precision Ball Bearings. They require no lubrication or adjustment. Phone your Ex-Cell-O representative or write to Ex-Cell-O in Detroit today for catalog 25962 listing hundreds of standard grinding spindles.



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PRODUCTION PARTS • DAIRY EQUIPMENT

# THE IRON AGE SUMMARY...

- ◀ New orders expected to pick up in next 30 days
- ◀ Steel gain may be sharper than other business
- ◀ Ingot rate up 1½ points; Steel scrap gains

**New Orders . . .** Steel orders are expected to pick up noticeably within the next 30 days. New orders placed during that time will be largely for September production. And steelmakers expect September to spearhead a steady fall upturn.

Meanwhile, July steel business is fully as sluggish as had been predicted. And August business, which is now pretty well on the books, will provide scant improvement.

Biggest reason for slow business now is plant-wide vacations of many steel consumers. Over-orders in June as a hedge against a possible steel strike have also resulted in less business now. There has also been some tapering of auto production as producers are getting ready to introduce new models.

**Why the Upturn? . . .** A number of factors make the steel market seem ripe for an upturn:

(1) Business in general has weathered the "adjustment" period, now seems headed into a period of steady if gentle improvement.

(2) Inventory correction on top of overall economic adjustment has caused steel business to be curtailed more sharply than most manufacturing industries. Now that inventory correction has just about run its course the pickup in steel may be sharper than in most other industries.

(3) Seasonal factors are important again. This makes it as natural to expect an upturn in the fall, as it is to expect a lull in activity during the summer months.

**Production . . .** Steelmaking operations this week are scheduled at 66.0 pct of rated capacity, a gain of 1½ points over last week's revised rate. The steel ingot production index is estimated at 97.9 (1947-49 = 100).

**Demand . . .** Market for sheets and strip, both hot and cold-rolled is generally dull. Spurred by grain bin program galvanized sheets are very firm. Tinplate is beginning to ease from pace of last few months.

Most oil country goods are still strong. Railroad demand is weak. Farm products are moving fairly well.

Reflecting continued high rate of activity in construction industry, structural demand is good though not as strong as it has been. There were some signs of easing in wide flange beam demand.

**Prices . . .** Steelmaking scrap prices edged up this week, after 6 consecutive weeks of decline. Increases raised THE IRON AGE Steel Scrap Composite Price 25¢ to \$26.83 per gross ton.

## Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
<b>Production</b> (Net tons, 000 omitted)	1,573	1,534	1,720	2,128
<b>Ingot Index</b> (1947-49=100)	97.9	95.5	107.1	132.5
<b>Operating Rates</b>				
Chicago	68.5	70.0*	83.5	98.0
Pittsburgh	62.0	64.0	75.0	95.0
Philadelphia	56.0	56.0	58.0	97.5
Valley	60.0	63.0*	67.0	97.0
West	82.0	77.5*	84.0	105.0
Detroit	79.0	68.0	59.0	107.0
Buffalo	59.0	59.0	67.5	106.5
Cleveland	68.0	68.0	65.0	92.0
Birmingham	75.0	75.0	76.0	102.5
S. Ohio River	68.0	68.0	81.5	92.0
Wheeling	89.0	78.0*	94.0	100.0
St. Louis	32.0	52.0*	60.0	57.0
East	66.0	64.5*	72.5	95.5

### Aggregate

\* Revised. † Tentative

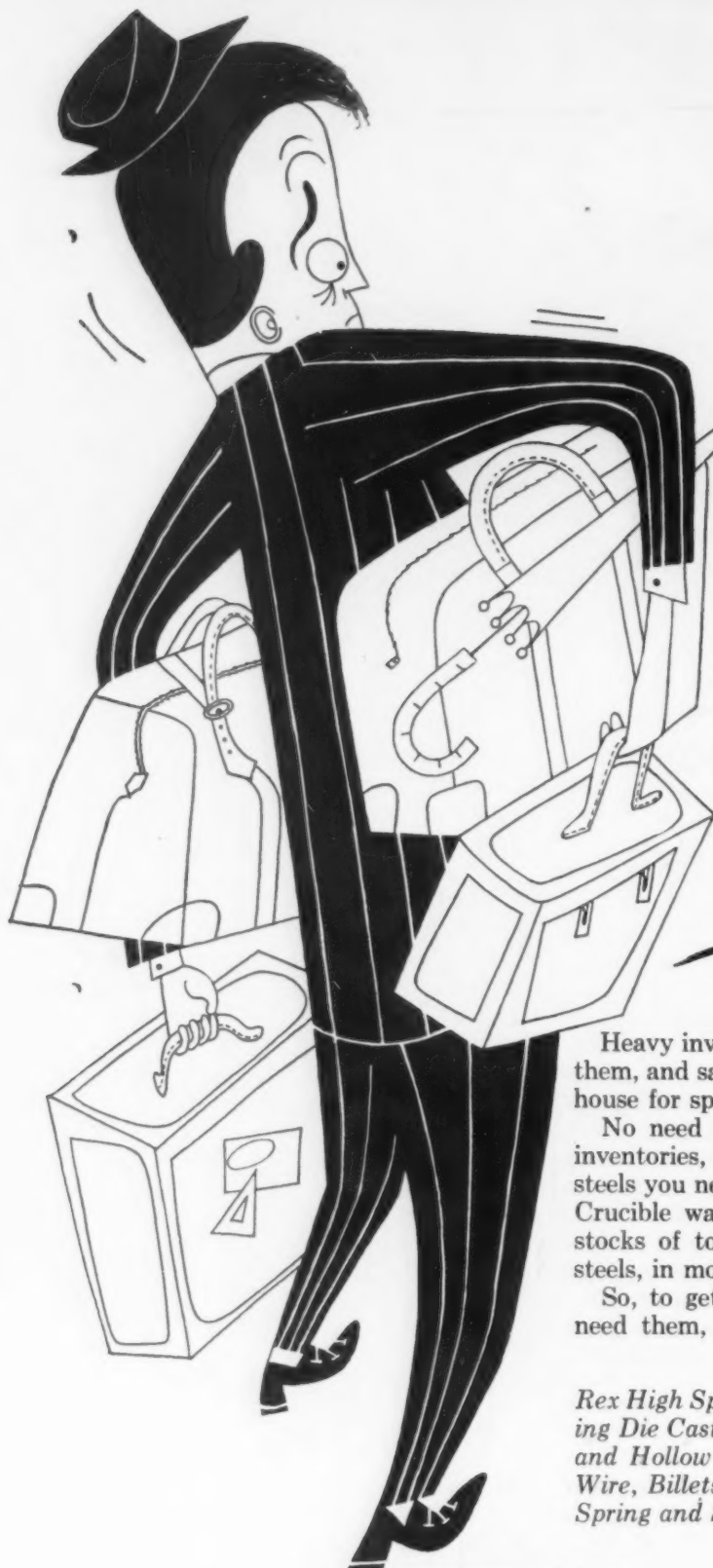
## Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
<b>Composite prices</b>				
Finished Steel, base	4.801	4.801	4.634	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.76
Scrap, No. 1 hvy (gross ton)	\$26.83	\$26.58	\$27.58	\$44.83
<b>Nonferrous</b>				
Aluminum, ingot	21.50	21.50	21.50	21.00
Copper, electrolytic	30.00	30.00	30.00	29.875
Lead, St. Louis	13.80	13.80	13.80	13.55
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Tin Straits, N. Y.	97.75	96.50	94.125	78.25
Zinc, E. St. Louis	11.00	11.00	11.00	11.00

July 22, 1954





**don't burden  
yourself with  
heavy inventories**

*— call*

**CRUCIBLE**

Heavy inventory burdens got you down? You can reduce them, and save money, too, by making Crucible your warehouse for special steels.

No need to tie up money or waste valuable space on inventories, when you can get immediate delivery of the steels you need from your local Crucible warehouse. For all Crucible warehouses from coast to coast carry extensive stocks of tool, stainless, alloy and other special purpose steels, in most sizes and grades.

So, to get the highest quality special steels, when you need them, and avoid inventory problems, call Crucible.

*Stocks maintained of:*

*Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . Max-el . . . AISI Alloy, Onyx Spring and Special Purpose Steels*

**CRUCIBLE**

first name in special purpose steels

54 years of *Fine* steelmaking

**WAREHOUSE SERVICE**

**CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.**

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PROVIDENCE • ROCKFORD • SAN FRANCISCO • SEATTLE • SPRINGFIELD, MASS. • ST. LOUIS • ST. PAUL • SYRACUSE • TORONTO, ONT. • WASHINGTON, D.C.

## Slow Market Shows Little Change

**Oil country, galvanized sheets keep strength . . . Construction activity steadies structurals, re-bars, standard pipe . . . Optimists look for an early fall upswing.**

The steel market continued to lag through a slow July, and some producers are becoming nervous over September prospects as order books showed plenty of white space with the deadline for September delivery fast approaching.

There was little in the immediate offing to cheer about but the feeling prevails that demand will pick up in the fall and continue to improve over balance of the year.

Competition is perhaps as fierce as it's ever been. After a long drought, purchasing agents are learning over again how it feels to be taken to lunch and receive steel salesmen in their own offices instead of going hat-in-hand to the mills.

The market shows little change from week-to-week. Sheets and bars continue weak. Tinplate is easing. Strongest products are oil country goods, galvanized sheets, and structurals. Standard pipe has picked up during the last month. Construction wire products are strong. Reinforcing bar is in good demand in some marketing areas. Other wire products are spotty, strong in some areas, decidedly off in others. Demand for stainless shows little change—still weak.

**SHEETS AND STRIP . . .** Pittsburgh mills report no improvement in demand, but look hopefully to a pickup in automotive outlets in September. Detroit finds August tonnage will be off but not so sharply as expected; continued good production by Ford and GM is sustaining the market. In Chicago it's the other way around—order books are off more than expected; plants shut down for vacation are issuing stop orders on shipments until they reopen; but producers expect demand to improve, particularly on cold-rolled, and there have been a few urgent calls for quick delivery. Galvanized sheet producers find business

### Purchasing Agent's Checklist

**STEEL:** Slow August with September pickup . . . . . p. 145

**ALUMINUM:** Production this year will beat '53 . . . . . p. 61

**TITANIUM:** Senate approves \$130 million stockpile . . . . . p. 69

**EPOXIES:** New resin group has many uses . . . . . p. 62

universally good as corn bin programs gobble up heavy tonnages. In Chicago one mill is booked for 3 months and extending deliveries. Galvanized demand spiraled upward on the West Coast, where mill backlogs suddenly shot up from 3 to 6 weeks; even warehouses are sharing in the boom as consumers used to earlier short mill deliveries find they can't get that kind of service now. Spurt is attributed to inventory depletion, improved farmer spending power, rural construction activity and limited production capacity.

**BARS . . .** Pittsburgh producers are practically on a warehouse basis on both hot-rolled and cold finished carbon bars. Other producing centers find the going just about as tough. In Cleveland, Republic Steel extended its county symbol delivered pricing system to alloy bars on July 12. No pickup in bars is expected till vacationing plants get back into full production. There was some strike hedging on bars, but that is only part of the story. Both large and small consumers simply are out of the market either because of good inventories or reduced consumption. The picture is better in re-inforcing bars. Cleveland reports re-bars continue strong. In the East, the market is still good but prices are soft due to foreign competition.

**TUBULAR . . .** Demand for oil country goods is holding firm, likely to stay that way for balance of the year. Chicago reports that mechanical tubing is in surprisingly good demand. Pittsburgh mills note an improvement in demand for standard pipe, both black and galvanized. The same situation exists in the East, where heavy construction programs are keeping the market up.

**STRUCTURALS AND PLATE . . .** In keeping with booming construction activity, structural demand is good, although not so frantic as it was earlier in the year. Some signs of an easing in wide flange beam demand have cropped up in several producing centers. Chicago notes that wide flange demand has slowed slightly in last 30 days; spot tonnages are being offered to local consumers for short delivery. The plate market is quiet in the East, but ICC approval of railroad piggyback cars may give demand a shot in the arm through stepped up railroad car buying. In Chicago, a cutback by linepipe producers materialized as expected but this was partially offset by better demand from fabricators. Deliveries can be had in 3 weeks, however.

**WIRE . . .** An easier market is shaping up, although demand in the Chicago area continues good. Pittsburgh mills report a slow market for merchant and manufacturers' wire, continued good demand for construction products. Tapering of demand in the Cleveland area leaves little doubt that the spring buying surge has run its course.

**STAINLESS . . .** Reports from producing centers vary. Pittsburgh mills make no secret of the fact that their business is way off. But in Cleveland, mills report that "steady interest in small tonnages is keeping stainless demand ahead of most carbon steel items."

**WAREHOUSE . . .** No one is trying to pretend that business is anything but poor. A slight pickup was experienced in Cleveland, but warehousemen there are beginning to wonder whether they dare to increase prices. Pittsburgh mills had no such compunctions, they raised their prices week before last.

## Copper Stocks Tumble 87,500 Tons

**June statistics show healthy decline of refined stocks . . . Due to fast switch of Chilean metal to U. S. stockpile . . . GSA buying more lead and zinc—By R. L. Hatschek.**

Definite signs of improvement showed in statistics covering copper, lead and zinc last week while aluminum held steady. Copper stocks plunged during June. A decline was expected, to be sure, but the tonnage was far beyond most earlier estimates.

Answer is that transfer of Chilean metal to the U. S. strategic stockpile is being speedily accomplished. There remains some 25,000 tons yet to go into the government stockpile, according to industry estimates—and this may be finished this month.

While lead imports rose slightly in May, the trend for both lead and zinc imports is downward. And an interim directive from Office of Defense Mobilization is keeping stockpiling alive.

While total aluminum output for the month of June was down, the daily production rate was very nearly at May's record rate. Big question at presstime was the way labor talks were proceeding behind closed doors.

**COPPER . . .** Statistical report of the Copper Institute was the major news topic in the red metal late last week. The industry tally sheet for June shows a decrease in refined stocks of 87,513 tons. This brings the combined stocks held domestically

### Stockpile Balance Sheet

	(net tons)	
	Bought to	Goal
	June 30, 1954	
Tungsten	985,295	3,000,000
Manganese	8,693,440	41,440,000
Columbium-Tantalum	2,333	7,500
Chrome	71,996	224,000
Mica	3,413	25,000
Beryl	266	1,500
Asbestos	295	1,500
Reported this week by General Services Administration.		

and outside the U. S. to 249,832 tons. The figure compares with a high for the year of 405,563 tons at the end of March.

A healthy decline had been expected to result from U. S. stockpile buying of 100,000 tons of Chilean copper, some 40,000 tons of which had been transferred in May, but few expected this big a reduction.

Domestic refined copper production in June was 112,121 tons; outside the U. S. the output was 88,615 tons. These compare with May figures of 108,403 tons and 95,564 tons, respectively. Crude primary production jumped slightly to 74,146 tons in the U. S. and 125,240 tons outside. Domestic crude production from secondary sources, however, jumped from 6660 tons in May to 10,943 tons in June, highest in quite a while.

Meanwhile, the copper market continues to roll along showing good strength.

**LEAD, ZINC . . .** General Services Administration is now accepting some offers of undisclosed amounts of lead and zinc. Authority to buy them (along with copper and manganese) was given GSA in an interim Office of Defense Mobilization directive expiring July 31.

Earlier lead and zinc buying had been under a fiscal 1954 directive which ended June 30 and a general stockpiling directive had been expected early this month.

Issuance of the overall stockpiling order will probably not be immediate, say Washington sources, because ODM is waiting to see what final treatment Congress gives bill proposing supplemental funds for the stockpile program. Early this week the measure (S. 9936) was still before the Senate Appropriations Committee.

May import figures show a slight increase for lead, a slight decrease for zinc as compared with the preceding month. Total lead imports, in all forms, were 42,195 tons (April, 40,317 tons) bringing the 5-month total to 173,435 tons as compared to 264,801 tons in the same 1953 period. Refined lead tonnage for the 5 months totaled 110,048, about 53 pct of refined tonnage imported in January to May last year.

In zinc, total imports for May were 42,176 tons, down about 3500 tons. Big drop was in metallic zinc—from 14,397 tons in April to 10,139 tons in May. On the 5-month total, 1954 scored 59,518 tons as compared to the 1953 figure of 115,253 tons.

**ALUMINUM . . .** Negotiations between the United Steel Workers and Aluminum Co. of America were continuing quietly at presstime with a tight curtain of secrecy around them. Peaceful settlement is expected and the announcement may come at any time between now and July 31 when contracts expire.

Meanwhile, the producers continue to siphon metal from their pots at a terrific rate (See p. 61). June production totaled 120,680 tons as compared to alltime record output of 125,144 tons in the 31-day month of May. This brings total production for the first half to a record 715,326 tons.

### NONFERROUS METAL PRICES

(Cents per lb except as noted)

	July 14	July 15	July 16	July 17	July 19	July 20
Copper, electro, Conn . . . . .	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered . . . . .	30.00	30.00	30.00	30.00	30.00	30.00
Tin Straits, New York . . . . .	96.75	97.25	97.75	97.75	97.75	97.75*
Zinc, East St. Louis . . . . .	11.00	11.00	11.00	11.00	11.00	11.00
Lead, St. Louis . . . . .	13.80	13.80	13.80	13.80	13.80	13.80

Note: Quotations are going prices

\*Tentative





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\*Nominal Chemical Composition

# ALTER

*Alloy Metal Division*

C O M P A N Y

1701 Rockingham Road, DAVENPORT, IOWA

Phone 6-2561

Teletype DV 588

# Nonferrous Prices

(Effective July 20, 1954)

## MILL PRODUCTS

(Cents per lb, unless otherwise noted)

### Aluminum

(Base 30,000 lb, f.o.b. ship, pt. frt. allowed)

Flat Sheet: 0.136 in. and thicker, 2S, 3S, 33.9¢; 4S, 36.0¢; 52S, 38.2¢; 24S-O, 24S-OAL, 37.0¢; 75S-O, 75S-OAL, 44.7¢; 0.081-in., 2S, 3S, 35.1¢; 4S, 37.7¢; 52S, 39.9¢; 24S-O, 24S-OAL, 38.4¢; 75S-O, 75S-OAL, 46.9¢; 0.032-in., 2S, 3S, 37.0¢; 4S, 41.8¢; 24S-O, 24S-OAL, 46.9¢; 75S-O, 75S-OAL, 58.4¢.

Plate, 1/4-in. and heavier: 2S-F, 3S-F, 32.4¢; 4S-F, 34.5¢; 52S-F, 36.2¢; 61S-O, 35.6¢; 24S-O, 24S-OAL, 36.9¢; 75S-O, 75S-OAL, 44.3¢.

Extruded Solid Shapes: Shape factors 1 to 5, 36.5¢ to 82.8¢; 12 to 14, 37.2¢ to 99.0¢; 24 to 26, 39.9¢ to \$1.29; 36 to 38, 47.2¢ to \$1.89.

Rod, Rolled: 1.064 to 4.5-in., 2S-F, 3S-F, 43.8¢ to 37.2¢; cold-finished, 0.375 to 3.449-in., 2S-F, 3S-F, 47.6¢ to 39.3¢.

Screw Machine Stock: Rounds, 11S-T3, 1/2 to 1 1/31-in., 69.6¢ to 47.0¢; 3/4 to 1 1/2-in., 46.6¢ to 43.8¢; 1 1/16 to 3-in., 42.7¢ to 39.9¢. Base 5000 lb.

Drawn Wire: Coiled 0.051 to 0.874-in., 2S, 44.1¢ to 32.4¢; 52S, 58.4¢ to 39.1¢; 17S-T4, 60.1¢ to 41.8¢; 61S-T4, 53.9¢ to 41.3¢.

Extruded Tubing: Rounds, 63S-T6, OD 1 1/4 to 2-in., 31.6¢ to 60.7¢; 2 to 4 in., 37.7¢ to 51.1¢; 4 to 6 in., 38.2¢ to 46.6¢; 6 to 9 in., 38.7¢ to 48.8¢.

Roofing Sheet: Flat, per sheet, 0.032-in., 42¢ x 60 in., \$2.888; x 96 in., \$4.543; x 120 in., \$5.680; x 144 in., \$6.816. Coiled sheet, per lb, 0.019 in., x 28 in., 30.8¢.

### Magnesium

(F.o.b. mill, freight allowed)

Sheet & Plate: FSI-O 1/4 in., 56¢; 3/16 in., 57¢; 1/8 in., 60¢; 0.064 in., 73¢; 0.032 in., 94¢. Specification grade higher. Base 30,000 lb.

Extruded Round Rod: M, diam 1/4 to 0.311 in., 77¢; 3/8 to 1/2 in., 60.5¢; 1/2 to 1.749 in., 56¢; 2 1/2 to 5 in., 51.5¢. Other alloys higher. Base up to 1/2 in. diam, 10,000 lb; 3/4 to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes: Rectangles: M. In weight per ft, for perimeters less than size indicated: 0.10 to 0.11 lb, 8.5 in., 65.3¢; 0.22 to 0.25 lb, 5.9 in., 62.3¢; 0.50 to 0.59 lb, 8.6 in., 59.7¢; 1.8 to 2.59 lb, 19.5 in., 56.8¢; 4 to 6 lb, 28 in., 52¢. Other alloys higher. Base, in weight per ft of shape: Up to 1/2 lb, 10,000 lb; 1/2 to 1.80 lb, 20,000 lb; 1.80 lb and heavier, 30,000 lb.

Extruded Round Tubing: M, 0.049 to 0.057 in. wall thickness: OD, 3/4 to 5/16 in., \$1.43; 5/16 to 1/2 in., \$1.29; 1/2 to 3/4 in., 96¢; 1 to 2 in., 79¢; 0.165 to 0.219 in. wall: OD, 3/4 to 1 in., 64¢; 1 to 2 in., 60¢; 3 to 4 in., 59¢. Other alloys higher. Base, OD: Up to 1 1/2 in., 10,000 lb; 1 1/2 to 3 in., 20,000 lb; over 3 in., 30,000 lb.

### Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, \$15; Plate, HR, \$12; Wire, rolled and/or drawn, \$11; Bar, HR or forged, \$6; Forgings, \$6.

### Nickel, Monel, Inconel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	86 1/2	67 1/2	92 1/2
Strip, CR	92 1/2	70 1/2	98 1/2
Rod, bar	82 1/2	65 1/2	88 1/2
Angles, HR	82 1/2	65 1/2	88 1/2
Plate, HR	84 1/2	66 1/2	90 1/2
Seamless tube	115 1/2	100 1/2	137 1/2
Shot, blocks		60	

### Copper, Brass, Bronze

(Freight included on 500 lb)

	Sheet	Rods	Extruded Shapes
Copper	46.41		48.48
Copper, h-r	48.38	44.73	
Copper, drawn		45.98	
Low brass	44.47	44.41	
Yellow brass	41.72	41.66	
Red brass	45.44	45.38	
Naval brass	45.76	40.07	
Lead brass			39.11
Com. bronze	46.95	46.89	
Mang. bronze	49.48	43.62	45.18
Phos. bronze	66.58	67.08	
Muntz metal	43.96	39.77	41.02
Ni silver, 10 pct 55.36			62.63
Beryllium copper, CR, 1.9% Be, Base 2000 lb, f.o.b.			
Strip			\$1.68
Rod, bar, wire			1.65

## PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed 21.50  
Aluminum pig 20.00  
Antimony, American, Laredo, Tex. 28.50  
Beryllium copper, per lb conta'd be. \$40.00  
Beryllium aluminum 5% Be, Dollars per lb contained Be \$72.75  
Bismuth, ton lots 32.25  
Cadmium, del'd 31.70  
Cobalt, 97-99% (per lb) \$2.60 to \$2.67  
Copper, electro, Conn. Valley 30.00  
Copper, Lake, delivered 30.00  
Gold, U. S. Treas., per troy oz. \$35.00  
Indium, 99.8%, dollars per troy oz. \$2.25  
Iridium, dollars per troy oz. \$165 to \$175  
Lead, St. Louis 13.80  
Lead, New York 14.00  
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb, pig 27.00  
Ingot 27.75  
Magnesium, sticks, 100 to 500 lb, 46.00 to 48.00  
Mercury, dollars per 76-lb flask, f.o.b. New York \$280 to \$285  
Nickel electro, f.o.b. N. Y. warehouse 63.08  
Nickel oxide sinter, at Copper Creek, Ont., contained nickel 56.25  
Palladium, dollars per troy oz. \$21.00  
Platinum, dollars per troy oz. \$84 to \$87  
Silver, New York, cents per troy oz. 85.25  
Tin, New York 97.75  
Titanium, sponge, grade A-1 34.72  
Zinc, East St. Louis 11.00  
Zinc, New York 11.50  
Zirconium copper, 50 pct 36.20

## REMELTED METALS

### Brass Ingot

(Cents per lb delivered carloads)

85-5-5-5 ingot  
No. 115 27.00  
No. 120 26.25  
No. 123 25.75  
80-10-10 ingot  
No. 305 31.50  
No. 315 29.25  
88-10-2 ingot  
No. 210 41.25  
No. 215 37.75  
No. 245 33.25  
Yellow ingot  
No. 405 23.25  
Manganese bronze  
No. 421 26.75

### Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys  
0.30 copper, max. 22.50-22.75  
0.60 copper, max. 22.25-22.50  
Piston alloys (No. 122 type) 20.00-21.25  
No. 12 aluminum (No. 2 grade) 19.25-19.75  
108 alloy 19.75-20.25  
195 alloy 21.00-21.50  
13 alloy (0.60 copper max.) 22.25-22.50  
ASX-679 19.75-20.25

### Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—96-97 1/2% 20.00-20.50  
Grade 2—92-95% 19.00-19.50  
Grade 3—90-92% 18.00-18.50  
Grade 4—85-90% 17.00-17.50

## ELECTROPLATING SUPPLIES

### Anodes

(Cents per lb, freight allowed, 5000 lb lots)

Copper  
Cast, oval, 15 in. or longer 42.64  
Electrodeposited 41.88  
Flat rolled 45.04  
Brass, 80-20  
Cast, oval, 15 in. or longer 43.515  
Zinc, flat cast 20.25  
Ball, anodes 18.50  
Nickel, 99 pct plus  
Cast 84.00  
Cadmium \$1.70  
Silver 999 fine, rolled, 100 oz. lots per troy oz., f.o.b. Bridgeport, Conn. 94 1/2

### Chemicals

(Cent per lb, f.o.f. shipping points)

Copper cyanide, 100 lb drum 63.00  
Copper sulfate, 99.5 crystals, bbl. 12.35  
Nickel salts, single or double, 4-100 lb bags, frt. allowed 30.00  
Nickel chloride, 375 lb drum 33.00  
Silver cyanide, 100 oz. lots, per oz. 75 1/2  
Sodium cyanide, 96 pct domestic 19.25  
Zinc cyanide, 100 lb drum 54.30

## SCRAP METALS

### Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25 1/2
Yellow brass	19 1/2	18
Red brass	23	22 1/2
Comm. bronze	23 1/2	23 1/2
Mang. bronze	18 1/2	17 1/2
Yellow brass rod ends	19 1/2	

### Custom Smelters' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 27 — 27 1/2  
No. 2 copper wire 25 1/2 — 25 1/2  
Light copper 24 — 24 1/2  
\*Refinery brass 22 1/2 — 23  
\*Dry copper content.

### Ingot Makers' Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 27 — 27 1/2  
No. 2 copper wire 25 1/2 — 25 1/2  
Light copper 24 — 24 1/2  
No. 1 composition 21 1/2  
No. 1 comp. turnings 20 1/2  
Rolled brass 17 1/2  
Brass pipe 18 1/2  
Radiators 17 1/2 — 17 1/2

### Aluminum

Mixed old cast 13 — 13 1/2  
Mixed new clips 13 1/2 — 14  
Mixed turnings, dry 13 1/2 — 13 1/2  
Pots and pans 13 — 13 1/2

### Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

### Copper and Brass

No. 1 heavy copper and wire 24 1/2 — 25  
No. 2 heavy copper and wire 23 — 23 1/2  
Light copper 21 — 21 1/2  
New type shell cuttings 20 1/2  
Auto radiators (unswaged) 15  
No. 1 composition 19 — 19 1/2  
No. 1 composition turnings 18 1/2 — 19  
Unlined red car boxes 16  
Cocks and faucets 16 — 16 1/2  
Mixed heavy yellow brass 12  
Old rolled brass 15 1/2  
Brass pipe 16 1/2 — 17  
New soft brass clippings 17 1/2 — 18  
Brass rod ends 15 — 16  
No. 1 brass rod turnings 14 — 15

### Aluminum

Alum. pistons and struts 7 — 8  
Aluminum crankcases 10  
2S aluminum clippings 13  
Old sheet and utensils 10  
Borings and turnings 6 — 7  
Misc. cast aluminum 10  
Dural clips (24S) 11

### Zinc

New zinc clippings 6 — 6 1/2  
Old zinc 4 1/2 — 5  
Zinc routings 3 — 3 1/2  
Old die cast scrap 2 — 3 1/2

### Nickel and Monel

Pure nickel clippings 60 — 65  
Clean nickel turnings 40  
Nickel anodes 60 — 65  
Nickel rod ends 60 — 65  
New Monel clippings 23 — 25  
Clean Monel turnings 16 — 18  
Old sheet Monel 21 — 23  
Nickel silver clippings, mixed 15  
Nickel silver turnings, mixed 13

### Lead

Soft scrap lead 10 1/2 — 11 1/2  
Battery plates (dry) 5 1/2 — 6  
Batteries, acid free 4 1/2

### Magnesium

Segregated solids 18 1/2 — 19  
Castings 17 1/2 — 18

### Miscellaneous

Block tin 75 — 80  
No. 1 pewter 55 — 60  
No. 1 auto babbitt 45 — 48  
Mixed common babbitt 12 1/2 — 13  
Solder joints 45  
Siphon tops 15 1/2  
Small foundry type 14  
Monotype 13  
Lino. and stereotype 11 1/2  
Electrotype 8 1/2  
Hand picked type shells 5 1/2 — 5 1/2  
Lino. and stereo. dross 3 1/2 — 4  
Electro dross 4



## This Point is Not Exaggerated

Spare the rod (quality-wise), and you may spoil the brain-child of the product designer.

This point is well taken by many manufacturers who fabricate Brass Rod into component parts for pens and pencils, clocks, lamps, electric and plumbing fixtures, screw machine parts, and what have you. And that's why so many of these manufacturers are what you might call "confirmed addicts" of Bristol Brass Rod.

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*"Bristol-Fashion" means* **Brass at its Best**



## Spotty Market Shows Firmer Trend

**Buying activity slight . . . Export sales in the East push composite up 25¢ . . . Most areas report price slide about over . . . Post-vacation outlook more bullish.**

Export buying in East Coast scrap centers had the effect of pushing Philadelphia up \$1 on steel-making grades. This change was reflected in a 25¢ rise in THE IRON AGE Composite to \$26.83.

Scattered mill sales in the past 2 weeks acted to firm Chicago prices, but no large scale buying is expected for the remainder of July. A turnings purchase was cited as a factor in pegging prices.

Extreme lack of activity in the Detroit area sent steelmaking scrap into a mild decline, but dealers are resisting further drops.

In Cleveland foundry vacations have caused a drop off of cast scrap demand. Turnings and borings softened somewhat but showed no change.

In Birmingham, the return of one large buyer sent the price of No. 2 heavy melting up \$1 per ton.

A purchase of steelmaking grades in Buffalo moved those items up \$1 per ton. These advanced prices were supported by Valley buying in the area.

**Pittsburgh . . .** Market continues dull, but prevalent feeling is that better prices are in the offing. Increased scrap exports are having a tightening effect in this area. Brokers report inability to bring material in from the East at present prices. Despite current inactivity, no one foresees a further break in the price structure. On the contrary the consensus is that when consumers come back into the market they will be lucky to buy at today's quotations, may have to bid higher. Prices are unchanged.

**Chicago . . .** With scattered mill sales in the past 2 weeks, Chicago prices were firming slightly and dealers were expressing more confidence, but it seemed certain that there would be no large-scale mill buying during the remainder of July. A turnings

purchase, as well as some No. 2 bundle orders, though in very small quantity, had the effect of pegging a number of prices, though electric furnace continued in poor condition. Cast prices shared in the generally healthier tone. Scrap in the area has fallen rapidly in volume with the vacation season, and this has been reflected in reported steadiness in dealer asking prices. Despite expected low movement during latter July and through August, a few brokers are beginning to suggest that scrap has reached the bottom of its slide. Factory heavy melting continues to command a premium price.

**Philadelphia . . .** Export buying has finally had the effect of pushing up some prices for steelmaking scrap by \$1 per ton. Also, a sale last week added \$1 to low phos prices. But domestic consumers show no signs of competing seriously for scrap to be exported and continue to take material on old contracts at old prices. One ship is expected to begin loading next week.

**New York . . .** Continuing export business here gave the market a split personality look early this week. Broker demand for quality scrap for export raised prices on steelmaking grades about \$1, even in face of sparse mill orders. On top of this exporters were paying \$1 to \$2 premium for large (80,000-lb car) shipments. But some of the same brokers were not interested in smaller tonnages for domestic mills.

**Detroit . . .** Fractional drops in openhearth and blast furnace grades reflected the inactivity of the market. Only a few token orders have been placed here and very few new orders are in prospect. What little scrap that is moving comes mostly from shipments that were held up in recent labor negotiations. In spite of little mill buying, brokers probing for lower prices have encountered some resistance from dealers.

**Cleveland . . .** Prices remained unchanged this week as the market leveled off. General lack of activity has kept most quotations small. Turnings and borings softened somewhat after holding firm in the face of recent price fluctuations. Foundry vacations have hit demand for cast scrap.

**Birmingham . . .** The largest scrap buyer in the district was back in the market this week for a limited tonnage of No. 2 heavy melting at a \$1 per ton increase. Cast grades, still in demand by foundries that have completed vacations, are becoming more scarce again. Dealers believe that this is because the extremely hot weather is deterring suppliers from picking it up.

**St. Louis . . .** With a further drop to 53.9 pct in the steel rate in St. Louis district as a result of a slowdown in mill volume, many items are down from \$1 to \$5 per ton, including RR and cast grades. Dealers' melting grades are steady and unchanged because there has been little buying, and that from local sources only.

**Cincinnati . . .** Bearish brokers insist that lack of local consumption has weakened openhearth grades by at least \$1, but so far there hasn't been a regional test strong enough to disturb the purely nominal nature of this market.

**Buffalo . . .** Stronger tendencies rule the market as leading mills purchased about 10,000 tons of steelmaking grades at \$1 per ton higher. Advanced prices were supported also by Valley buying of No. 1 material here. Bullish sentiments, however, were held in check by a lower ingot rate and a decline of \$1 a ton in cast.

**Boston . . .** Not a single change is reported in the stagnant New England scrap market this week. Major topic of trade talk is a freight rate change expected to be made this week.

**West Coast . . .** Vacations began taking cut into market, resulting in slowest action in weeks. Seattle currently the best market, because higher prices and hot weather has hurt Los Angeles operations. San Francisco still poorest market. No price changes anywhere.



**A SYMBOL OF LEADERSHIP  
IN IRON & STEEL SCRAP  
SINCE 1889**

*Luria Brothers and Company, Inc.*

**MAIN OFFICE  
LINCOLN-LIBERTY BLDG.**

Philadelphia 7, Penna.

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MODENA, PENNA.	PITTSBURGH, PENNA.
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EXPORTS-IMPORTS — LIVINGSTON & SOUTHARD, INC. 99 Park Ave., New York, N. Y. Cable Address: FORENTRACO

# Scrap Prices

(Effective July 20, 1954)

## Pittsburgh

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	25.00 to 26.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	23.00 to 24.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and ms. turns	14.00 to 15.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	18.00 to 19.00
Low phos. punch'gs, plate	31.00 to 32.00
Heavy turnings	26.00 to 27.00
No. 1 RR. hvy. melting	31.00 to 32.00
Scrap rails, random lgth.	36.00 to 37.00
Rails 2 ft and under	42.00 to 43.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	42.00 to 43.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	30.00 to 31.00

## Chicago

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 factory bundles	31.00 to 32.00
No. 1 dealers' bundles	28.00 to 29.00
No. 2 dealers' bundles	20.00 to 22.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos. forge crops	34.00 to 35.00
Low phos. punch'gs, plate	32.00 to 33.00
Low phos. 3 ft and under	31.00 to 32.00
No. 1 RR. hvy. melting	32.00 to 33.00
Scrap rails, random lgth.	36.00 to 37.00
Rerolling rails	42.00 to 43.00
Rails 2 ft and under	43.00 to 44.00
Locomotive tires, cut	33.00 to 34.00
Cut bolsters & side frames	35.00 to 36.00
Angles and splice bars	37.00 to 38.00
RR. steel car axles	40.00 to 41.00
RR. couplers and knuckles	35.00 to 36.00
No. 1 machinery cast.	39.00 to 40.00
Cupola cast	36.00 to 37.00
Heavy breakable cast.	28.00 to 29.00
Cast iron brake shoes	31.00 to 32.00
Cast iron car wheels	33.00 to 34.00
Malleable	40.00 to 41.00
Stove plate	31.00 to 32.00

## Philadelphia Area

No. 1 hvy. melting	\$23.00 to \$24.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 bundles	24.00 to 25.00
No. 2 bundles	17.00 to 18.00
Machine shop turn.	12.00 to 13.00
Mixed bor. short turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Shoveling turnings	16.00 to 17.00
Clean cast chem. borings	20.00 to 21.00
Low phos. 5 ft and under	25.00 to 26.00
Low phos. 2 ft and under	26.00 to 27.00
Low phos. punch'gs	26.00 to 27.00
Elec. furnace bundles	24.00 to 25.00
Heavy turnings	22.00 to 23.00
RR. steel wheels	31.00 to 32.00
RR. spring steel	31.00 to 32.00
Rails 18 in. and under	40.00 to 41.00
Cupola cast.	34.00 to 35.00
Heavy breakable cast.	35.00 to 36.00
Cast iron car wheels	38.00 to 39.00
Malleable	36.00 to 37.00
Unstripped motor blocks	27.00 to 28.00
No. 1 machinery cast.	39.00 to 40.00
Charging box cast.	36.00 to 37.00

## Cleveland

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
Machine shop turn.	12.00 to 13.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Cut struct'l & plate, 2 ft & under	31.50 to 32.50
Drop forge flashings	26.00 to 27.00
Low phos. 2 ft & under	28.00 to 29.00
No. 1 RR. heavy melting	27.00 to 28.00
Rails 3 ft and under	42.00 to 43.00
Rails 18 in. and under	43.00 to 44.00
Railroad grate bars	27.00 to 28.00
Steel axle turnings	19.00 to 20.00
Railroad cast.	41.00 to 42.00
No. 1 machinery cast.	41.00 to 42.00
Stove plate	33.00 to 34.00
Malleable	39.00 to 40.00

## Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

## Youngstown

No. 1 hvy. melting	\$28.00 to \$29.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	28.00 to 29.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	14.00 to 15.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. plate	30.00 to 31.00

## Buffalo

No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	22.00 to 23.00
No. 1 busheling	26.00 to 27.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	14.50 to 15.50
Mixed bor. and turn.	17.50 to 18.50
Shoveling turnings	18.00 to 18.50
Cast iron borings	17.50 to 18.50
Low phos. plate	29.00 to 30.00
Scrap rails, random lgth.	32.00 to 34.00
Rails 2 ft and under	40.00 to 41.00
RR. steel wheels	34.00 to 35.00
RR. spring steel	34.00 to 35.00
RR. couplers and knuckles	34.00 to 35.00
No. 1 machinery cast.	40.00 to 41.00
No. 1 cupola cast.	36.00 to 37.00

## Detroit

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$19.50 to \$20.50
No. 2 hvy. melting	16.50 to 17.50
No. 1 bundles, openhearth	21.50 to 22.50
No. 2 bundles	16.50 to 17.50
New busheling	19.50 to 20.50
Drop forge flashings	19.50 to 20.50
Machine shop turn.	6.00 to 7.00
Mixed bor. and turn.	8.00 to 9.00
Shoveling turnings	8.00 to 9.00
Cast iron borings	8.00 to 9.00
Low phos. punch'gs, plate	20.50 to 21.50
No. 1 cupola cast.	32.00
Heavy breakable cast.	23.00
Stove plate	25.00
Automotive cast.	36.00

## St. Louis

No. 1 hvy. melting	\$25.00 to \$26.00
No. 2 hvy. melting	23.50 to 24.50
No. 1 bundles	25.00 to 26.00
No. 2 bundles	19.50 to 20.50
Machine shop turn.	12.00 to 13.00
Cast iron borings	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
No. 1 RR. hvy. melting	28.00 to 29.00
Rails, random lengths	34.00 to 35.00
Rails, 18 in. and under	41.00 to 42.00
Locomotive tires, uncut	30.00 to 31.00
Angles and splice bars	30.00 to 31.00
Std. steel car axles	35.00 to 36.00
RR. spring steel	30.00 to 31.00
Cupola cast.	40.00 to 41.00
Hvy. breakable cast.	29.00 to 30.00
Cast iron brake shoes	25.00 to 26.00
Stove plate	30.00 to 31.00
Cast iron car wheels	30.00 to 31.00
Malleable	35.00 to 36.00
Unstripped motor blocks	29.00 to 30.00

## New York

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$19.00 to \$20.00
No. 2 hvy. melting	16.50 to 17.50
No. 2 bundles	13.50 to 14.50
Machine shop turn.	5.00 to 6.00
Mixed bor. and turn.	7.00 to 8.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings	14.00 to 15.00
No. 1 machinery cast.	35.00 to 36.00
Mixed yard cast.	29.00 to 30.00
Charging box cast.	29.00 to 30.00
Heavy breakable cast.	29.00 to 30.00
Unstripped motor blocks	22.00 to 23.00

## Birmingham

No. 1 hvy. melting	\$26.00
No. 2 hvy. melting	19.00
No. 1 bundles	30.00
No. 2 bundles	\$15.00 to 16.00
No. 1 busheling	20.00
Machine shop turn.	15.00 to 16.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	13.00 to 14.00
Electric furnace bundles	26.00 to 27.00
Bar crops and plate	29.00 to 30.00
Structural and plate, 2 ft	20.00 to 20.00
No. 1 RR. hvy. melting	26.00 to 27.00
Scrap rails, random lgth.	34.00 to 35.00
Rails, 18 in. and under	37.50 to 38.50
Angles & splice bars	35.00 to 36.00
Rerolling rails	39.50 to 40.00
No. 1 cupola cast.	43.50 to 44.50
Stove plate	40.50 to 41.50
Charging box cast.	19.00 to 20.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	34.50 to 35.50
Mashed tin cans	15.00 to 16.00

## Boston

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$15.00 to \$16.00
No. 2 hvy. melting	13.50 to 14.50
No. 1 bundles	15.00 to 16.00
No. 2 bundles	11.00 to 12.00
No. 1 busheling	15.00 to 16.00
Elec. furnace, 3 ft & under	17.00
Machine shop turn.	3.00 to 4.00
Mixed bor. and short turn.	6.00 to 7.00
Shoveling turnings	8.00 to 9.00
Clean cast chem. borings	9.00 to 10.00
No. 1 machinery cast.	27.00 to 28.00
Mixed cupola cast.	25.00 to 26.00
Heavy breakable cast.	23.50 to 24.00
Stove plate	24.00 to 25.00
Unstripped motor blocks	9.00 to 10.00

## Cincinnati

Brokers buying prices per gross ton, on cars:	
No. 1 hvy. melting	\$26.00 to \$27.00
No. 2 hvy. melting	23.00 to 24.00
No. 1 bundles	26.00 to 27.00
No. 2 bundles	21.00 to 22.00
Machine shop turn.	11.00 to 12.00
Mixed bor. and turn.	13.50 to 14.50
Shoveling turnings	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Low phos. 18 in. & under	32.00 to 33.00
Rails, random lengths	35.00 to 36.00
Rails, 18 in. and under	43.00 to 44.00
No. 1 cupola cast.	38.00 to 39.00
Hvy. breakable cast.	34.00 to 35.00
Drop broken cast.	43.00 to 44.00

## San Francisco

No. 1 hvy. melting	\$20.00
No. 2 hvy. melting	16.00
No. 1 bundles	19.00
No. 2 bundles	16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Cast iron borings	9.00
No. 1 RR. hvy. melting	22.00
No. 1 cupola cast.	\$43.00 to 46.00

## Los Angeles

No. 1 hvy. melting	\$30.00
No. 2 hvy. melting	15.00
No. 1 bundles	19.00
No. 2 bundles	\$15.50 to 16.00
No. 3 bundles	12.00
Machine shop turn.	5.00
Shoveling turnings	7.00 to 9.00
Cast iron borings	7.00 to 9.00
Elec. fur. 1 ft and under	25.00
No. 1 RR. hvy. melting	20.00
No. 1 cupola cast.	43.00 to 45.00

## Seattle

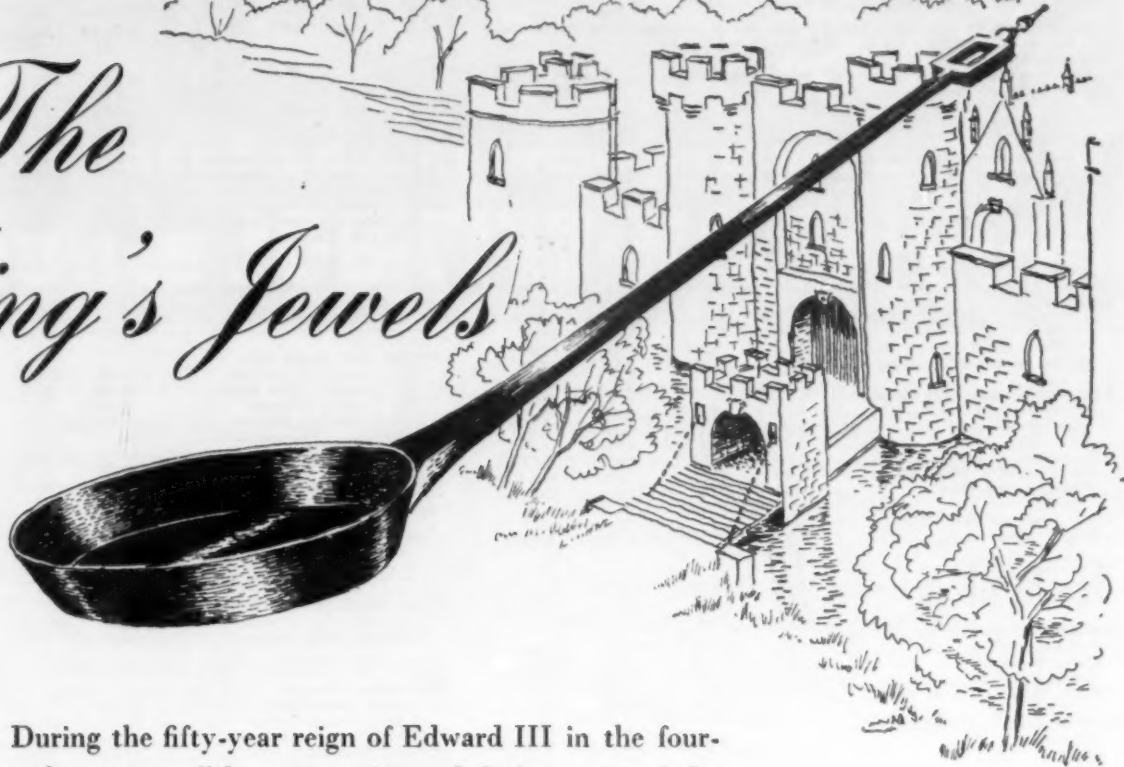
No. 1 hvy. melting	\$25.00
No. 2 hvy. melting	21.00
No. 1 bundles	21.50
No. 2 bundles	17.00
No. 3 bundles	13.00
No. 1 cupola cast.	37.00
Mixed yard cast.	35.00

## Hamilton, Ont.

No. 1 hvy. melting	\$22.00
No. 2 hvy. melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Mixed steel scrap	16.00
Bushelings	17.00
Bush., new fact prep'd.	20.00
Bush., new fact unprep'd	16.00
Short steel turnings	12.00
Mixed bor. and turn.	13.00
Rails, remelting	31.00
Cast scrap	\$42.00 to 45.00



# The King's Jewels



During the fifty-year reign of Edward III in the fourteenth century, "the pots, spits and frying pans of the royal kitchen were classed among the king's jewels". . . In 1645, at Lynn, Mass., a one-quart kettle, the first iron casting made in America, was given to Thomas Hudson, younger brother of Hendrik Hudson, as part consideration for sixty acres of land.

Today, cooking utensils may not be so highly valued, but they represent one of the thousands of indispensable demands upon iron and steel production—for civilian and military requirements. . . . To assure a continuity of this production, a constant supply of scrap must be maintained.

*For the purchase or sale of iron or steel scrap . . .*

*phone or write "Your Chicago Broker"*



*231 S. La Salle St., Chicago*

*Telephone ANdover 3-3900*

# Comparison of Prices

(Effective July 20, 1954)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland Youngstown.

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

	July 20 1954	July 13 1954	June 22 1954	July 21 1953
<b>Flat-Rolled Steel: (per pound)</b>				
Hot-rolled sheets	4.05¢	4.05¢	3.925¢	3.925¢
Cold-rolled sheets	4.95	4.95	4.775	4.775
Galvanized sheets (10 ga.)	5.45	5.45	5.275	5.275
Hot-rolled strip	4.05	4.05	3.925	3.925
Cold-rolled strip	5.82	5.82	5.513	5.575
Plate	4.237	4.237	4.10	4.10
Plates wrought iron	9.30	9.30	9.30	9.00
Stainl's C-R strip (No. 302)	41.60	41.60	41.60	41.60
<b>Tin and Terneplate: (per base box)</b>				
Tinplate (1.50 lb.) cokes	\$8.95	\$8.95	\$8.95	\$8.95
Tinplate, electro (0.50 lb.)	7.65	7.65	7.65	7.65
Special coated mfg. ternes	7.75	7.75	7.75	7.75
<b>Bars and Shapes: (per pound)</b>				
Merchant bars	4.312¢	4.312¢	4.16¢	4.15¢
Cold-finished bars	5.40	5.40	5.22	5.20
Alloy bars	5.075	5.075	4.875	4.875
Structural shapes	4.25	4.25	4.10	4.10
Stainless bars (No. 302)	35.50	35.50	35.50	35.50
Wrought iron bars	10.40	10.40	10.40	10.05
<b>Wire: (per pound)</b>				
Bright wire	5.75¢	5.75¢	5.525¢	5.525¢
<b>Rails: (per 100 lb.)</b>				
Heavy rails	\$4.45	\$4.45	\$4.325	\$4.325
Light rails	5.35	5.35	5.20	5.20
<b>Semifinished Steel: (per net ton)</b>				
Re-rolling billets	\$64.00	\$64.00	\$62.00	\$62.00
Slabs, re-rolling	64.00	64.00	62.00	62.00
Forging billets	78.00	78.00	75.50	75.50
Alloy blooms, billets, slabs	86.00	86.00	82.00	82.00
<b>Wire Rod and Skelp: (per pound)</b>				
Wire rods	4.675¢	4.675¢	4.525¢	4.525¢
Skelp	3.90	3.90	3.75	3.75
<b>Finished Steel Composite: (per pound)</b>				
Base price	4.801¢	4.801¢	4.634¢	4.634¢

## Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips

## Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

## Steel Scrap Composite

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

	July 20 1954	July 13 1954	June 22 1954	July 21 1953
<b>Pig Iron: (per gross ton)</b>				
Foundry, del'd Phila.	\$61.19	\$61.19	\$61.19	\$62.19
Foundry, Valley	56.50	56.50	56.50	56.50
Foundry, Southern, Cin'ti	60.43	60.43	60.43	60.43
Foundry, Birmingham	52.88	52.88	52.88	52.88
Foundry, Chicago	56.50	56.50	56.50	56.50
Basic del'd Philadelphia	60.27	60.27	60.27	61.27
Basic, Valley furnace	56.00	56.00	56.00	56.00
Malleable, Chicago	56.50	56.50	56.50	56.50
Malleable, Valley	56.50	56.50	56.50	56.50
Ferromanganese, cents per lb.	10.00¢	10.00¢	10.00¢	10.00¢
† 76 pct Mn base.				
<b>Pig Iron Composite: (per gross ton)</b>				
Pig iron	\$56.59	\$56.59	\$56.59	\$56.76
<b>Scrap: (per gross ton)</b>				
No. 1 steel, Pittsburgh	\$28.50	\$28.50	\$29.50	\$27.50
No. 1 steel, Phila. area	23.50	22.75	22.75	43.50
No. 1 steel, Chicago	28.50	28.50	30.50	43.50
No. 1 bundles, Detroit	22.00	22.50	24.50	40.50
Low phos., Youngstown	30.50	30.50	31.50	45.50
No. 1 mach'y cast, Pittsburgh	42.50	42.50	43.50	45.50
No. 1 mach'y cast, Philadel'a.	39.50	39.50	39.50	45.50
No. 1 mach'y cast, Chicago	39.50	39.50	40.50	45.50
<b>Steel Scrap Composite: (per gross ton)</b>				
No. 1 heavy melting scrap	\$26.83	\$26.58	\$27.58	\$44.83
<b>Coke, Connellsville: (per net ton at oven)</b>				
Furnace coke, prompt	\$14.88	\$14.88	\$14.88	\$14.76
Foundry coke, prompt	16.75	16.75	16.75	17.25
<b>Nonferrous Metals: (cents per pound to large buyers)</b>				
Copper, electrolytic, Conn.	30.00	30.00	30.00	29.97½
Copper, Lake, Conn.	30.00	30.00	30.00	30.12½
Tin, Straits, New York	97.75¢	96.50	94.125	78.25
Zinc, East St. Louis	11.00	11.00	11.00	11.00
Lead, St. Louis	13.80	13.80	13.80	13.55
Aluminum, virgin ingot	21.50	21.50	21.50	21.00
Nickel, electrolytic	63.08	63.08	63.08	63.08
Magnesium, ingot	27.75	27.75	27.75	27.00
Antimony, Laredo, Tex.	28.50	28.50	28.50	34.50
† Tentative. ‡ Average. * Revised.				

## PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

← To identify producers, see Key on p. 161 →

Producing Point	Basic	Fdry.	Mail.	Bess.	Low Phos.
Bethlehem B3	58.00	58.50	59.00	59.50	
Birmingham R3	52.38	52.88			
Birmingham W9	52.38	52.88			
Birmingham U4	52.38	52.88	56.50		
Buffalo R3	56.00	56.50	57.00		
Buffalo H1	56.00	56.50	57.00		
Buffalo W6	56.00	56.50	57.00		
Chicago I4	56.00	56.50	56.50	57.00	
Cleveland A5	56.00	56.50	56.50	57.00	61.00
Cleveland R3	56.00	56.50	56.50		
Danversfield L3	52.50	52.50	52.50		
Duluth I4	56.00	56.50	56.50	57.00	
Erie I4	56.00	56.50	56.50	57.00	
Everett M6		61.00	61.50		
Fontana K1	62.00	62.50			
Genova, Utah C7	56.00	56.50			
Granite City G2	57.90	58.40	58.90		
Hubbard Y1			56.50		
Minnequa C5	58.00	59.00	59.00		
Monessen P6	56.00				
Norville Isl. P4	56.00	56.50	56.50		
Pittsburgh U1	56.00			57.00	
Sharpsville S3	56.00	56.50	56.50	57.00	
Steelton B3	58.00	58.50	59.00	59.50	64.00
Swedeland A2	58.00	58.50	59.00	59.50	
Toledo I4	56.00	56.50	56.50	57.00	
Troy, N. Y. R3	58.00	58.50	59.00	59.50	64.00
Youngstown Y1			56.50	57.00	
N. Tonawanda T1		56.50	57.00		

**DIFFERENTIALS:** Add 50¢ per ton for each 0.25 pct silicon over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.50 pct manganese over 1 pct., \$2 per ton for .05 to 0.75 pct nickel, \$1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 and over.

**Silvery Iron:** Buffalo, H1, \$68.25; Jackson, J1, G1, \$67.00. Add \$1.50 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. Add \$1 per ton for 0.75 pct. or more phosphorus. Add 75¢ for each 0.50 pct. manganese over 1.0 pct. Bessemer ferro-silicon prices are \$1 over comparable silvery iron.

## STAINLESS STEEL

Base price cents per lb. f.o.b., ml

Product	301	302	303	304	316	321	347	410	416	430
Ingot, re-rolling	16.25	17.25	18.75	18.25	28.00	22.75	24.50	14.00		14.25
Slabs, billets, re-rolling	20.50	22.75	24.75	23.75	36.25	29.50	32.25	18.25		18.50
Forg. discs, die blocks, rings	38.50	38.50	41.50	40.50	60.00	45.50	50.75	31.00	31.75	31.75
Billets, forging	29.50	29.75	32.25	31.00	46.50	35.25	39.50	24.00	24.50	24.50
Bars, wires, structurals	35.25	35.50	38.25	37.25	55.50	42.00	46.75	28.75	29.25	29.25
Plates	37.25	37.50	39.75	39.75	58.75	45.75	51.25	30.00	30.50	30.50
Sheets	41.25	41.50	48.75	43.75	62.75	50.50	59.25	34.25	41.25	34.75
Strip, hot-rolled	29.75	32.00	36.75	34.25	53.25	41.00	46.50	26.25		27.00
Strip, cold-rolled	38.25	41.50	45.50	43.75	62.75-63.00	50.50-50.75	59.25	34.25	41.25	34.75

## STAINLESS STEEL PRODUCING POINTS:

**Sheets:** Midland, Pa., C11; Brackenridge, Pa., A3; Butler, Pa., A7; McKeesport, Pa., U1; Washington, Pa., W2, J4; Baltimore, Md.; Middletown, O., A7; Massillon, O., R3; Gary, U1; Bridgeville, Pa., U2; New Castle, Ind., I2; Ft. Wayne, J4.

**Strip:** Midland, Pa., C11; Cleveland, A5; Carnegie, Pa., S9; McKeesport, Pa., F1; Reading, Pa., C2; Washington, Pa., W2; W. Leechburg, Pa., A3; Bridgeville, Pa., U2; Detroit, M2; Canton-Massillon, O., R3; Middletown, O., A7; Harrison, N. J., D3; Youngstown, O., S3; Sharon, Pa., S1; Butler, Pa., A7; Wallingford, Conn., U3 (25¢ per lb higher) W1 (25¢ per lb higher); New Bedford, Mass., R6.

**Bar:** Baltimore, A7; Duquesne, Pa., U1; Munhall, Pa., U1; Reading, Pa., C2; Titusville, Pa., U2; Washington, Pa., J2; McKeesport, Pa., U1, F1; Bridgeville, Pa., U2; Dunkirk, N. Y., A3; Massillon, O., R3; Chicago, U1; Syracuse, N. Y., C11; Watervliet, N. Y., A3; Waukegan, Ill., A5; Canton, O., T3; Ft. Wayne, I4.

**Wire:** Waukegan, A5; Massillon, O., R3; McKeesport, Pa., F1; Ft. Wayne, J4; Harrison, N. J., D3; Baltimore, A7; Dunkirk, A3; Monessen, Pa.; Syracuse, C11; Bridgeville, U2.

**Structurals:** Baltimore, A7; Massillon, O., R3; Chicago, Ill., J4; Watervliet, N.Y., A3; Syracuse, C11.

**Plates:** Brackenridge, Pa., A3; Chicago, U1; Munhall, Pa., U1; Midland, Pa., C11; New Castle, Ind., I2; Middletown, A7; Washington, J2; Cleveland, Massillon, R3; Coatesville, Pa., C15.

**Forged discs, die blocks, rings:** Pittsburgh, C11; Syracuse, C11; Ferndale, Mich., A3; Washington, Pa., J2.

**Forging billets:** Midland, Pa., C11; Baltimore, A7; Washington, Pa., J2; McKeesport, F1; Massillon, Canton, O., A3; Watervliet, A3; Pittsburgh, Chicago, U1; Syracuse, C11.

# USING SHEET or STRIP STEEL?

# Really,

## you don't need an emergency to profit from Reliance JOB-FITTING Service

It is true: helping a steel buyer in an emergency shortage is an important warehouse function. And, such a shortage could happen almost any time—even in these days!

Normally though, warehouse services like ours, take care of the regular, day by day or month by month requirements of sheet and strip steel users. Some are for fill-in purposes; then again, many a job runs steadily on warehouse steel exclusively.

But Reliance Job-Fitting service, as you will find,

goes beyond routine order-taking-and-filling. For example—helping customers lick production problems involving the use of sheet and strip steel; suggesting practical ways of averaging-down steel costs.

No, it needn't take an emergency for you to use Reliance Job-Fitting service profitably.

Why not try us the next time you need sheet or strip steel? We honestly believe you'll like the way we work for and with you.



T. H. REG. U.S. AND CANADA  
**DEPENDABLE DAN**  
will take care of it  
for you!

**Here's the gist of the Reliance JOB-FITTING idea—**

- ... It's knowing our "stuff" ... our "feel for steel."
- ... It's knowing your job ... what you expect the steel to do for you.
- ... It's supplying in-stock sheet and strip best suited to your immediate need.

**FOR HELPFUL ACTION CALL OUR NEAREST PLANT OR OFFICE**

## RELIANCE STEEL DIVISION

Processors and Distributors **JOB-FITTED** Sheet and Strip Steel

GENERAL OFFICES — BOX 4308 — PORTER STATION, DETROIT 9, MICHIGAN

### PLANTS

CLEVELAND PLANT, 3344 E. 80th St., Vulcan 3-3600, Cleveland 27, O.  
DETROIT PLANT, 13770 Joy Road, Webster 3-5866, Detroit 28, Mich.  
EASTERN PLANT, 2061 State Street, State 7-5781, Hamden (New Haven 7), Conn.  
MIDWEST PLANT, 1601 South Wolcott Ave., Canal 6-2442, Chicago 8, Ill.

### OFFICES

COLUMBUS 12, OHIO, 1373 Grandview Ave., Kingswood 6264  
DAYTON, OHIO, 120 W. Second Street, Michigan 8381  
DES MOINES 9, IOWA, 610 Fleming Bldg., Des Moines 2-1498  
DETROIT 28, MICHIGAN, 13770 Joy Road, Webster 3-5866  
GRAND RAPIDS 2, MICH., 326 Keeler Bldg., Glendale 5-9568  
INDIANAPOLIS 4, IND., 1509 Fletcher Trust Bldg., Franklin 2331  
JACKSON 10, MICHIGAN, 801 Reynolds Bldg., Jackson 4-6108

MILWAUKEE 10, WIS., 4622 W. Center St., Milthrop 2-1040  
NEW YORK 10, N. Y., 250 West 57th St., Columbus 5-4870  
ROCHESTER 4, N. Y., 5 St. Paul St., Baker 1061  
ST. LOUIS 8, MO., 4370 Lindell Blvd., Lucas 4550  
TOLEDO 4, OHIO, 2114 Ohio Bldg., Garfield 8304  
WORCESTER 8, MASS., 507 Main St., Worcester 5-6686

### RELIANCE Job-Fitted PRODUCTS

COLD ROLLED STEEL STRIP — COILS — CUT LENGTHS — ALL TEMPER

SHEETS: COLD ROLLED — HOT ROLLED — H. R. PICKLED — LONG TERNE — GALVANIZED

Standard and Production Sizes or Cut to Actual Working Dimensions



### PRODUCERS OF

Coke • Coal Chemicals • Pig Iron • Ingots  
Slabs • Sheet Bars • Billets • Wire Rods  
Hot Rolled and Cold Rolled Sheet and Strip  
Low and Medium Carbon Manufacturers' Wire  
High Carbon Specialty Wire • Welded Fabric

**GENERAL OFFICES  
DETROIT 9, MICHIGAN**

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IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.												
STEEL PRICES (Effective July 20, 1954)		BILLETS, BLOOMS, SLABS			PIL-ING	SHAPES STRUCTURALS			STRIP					
		Carbon Re-rolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			\$86.00 B3		4.30 B3	6.45 B3	4.30 B3						
	Buffalo, N. Y.	\$64.00 B3	\$78.00 B3, R3	\$86.00 B3, R3	5.075 B3	4.30 B3	6.45 B3	4.30 B3	4.05 B3, R3	5.75 B3	6.15 B3	8.425 B3		
	Claymont, Del.													
	Coatesville, Pa.													
	Censhohecken, Pa.								4.175 A2		6.10 A2			
	New Bedford, Mass.									6.20 R6				
	Harrison, N. J.													
	Johansstown, Pa.	\$64.00 B3	\$78.00 B3	\$86.00 B3		4.30 B3	6.45 B3		4.05 B3					
	Fairless, Pa.													
	New Haven, Conn.									6.20 D1, 6.50 A5				
	Phoenixville, Pa.					3.80 P2		3.80 P2						
	Sparrows Pt., Md.								4.05 B3	5.75 B3	6.15 B3	8.425 B3		
	Wallingford, Conn.									6.20 W1				
	Worcester, Mass.									6.60 A5				12.75 B
MIDDLE WEST	Alton, Ill.								4.225 L1					
	Ashland, Ky.								4.05 A7					
	Canton-Massillon, Ohio			\$82.00 T5, \$86.00 R3										12.45 B
	Chicago, Ill.	\$64.00 U1	\$78.00 R3, U1, W8	\$86.00 U1, W8, R3	5.075 U1	4.25 U1, W8	6.40 U1, Y1	4.25 U1	4.05 A1, N4, W8	5.85 A1				
	Cleveland, Ohio		\$78.00 R3							5.75 A5, J3		8.60 A5		12.45 B
	Detroit, Mich.			\$88.00 R5					4.20 G3, M2	5.90 D1, D2, G3, M2, P11	6.30 G3	8.35 D2, 8.75 G3		
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana	\$64.00 U1	\$78.00 U1	\$86.00 U1, Y1	5.075 I3	4.25 I3, U1	6.40 U1, I3		4.05 I3, U1, Y1	6.00 I3	6.15 U1, I3, Y1		6.70 U1	
	Sterling, Ill.								4.15 N4					
	Indianapolis, Ind.									5.90 C5				
	Newport, Ky.												6.70 N5	
	Middletown, Ohio									5.75 A7				
	Niles, Warren, Ohio								4.05 S1, R3	5.75 S1, R3, T4	6.15 S1, R3	8.60 S1, R3	6.70 S1	12.45 B
	Pittsburgh, Pa.	\$64.00 U1, J3	\$78.00 J3, U1, C11	\$86.00 U1, C11	5.075 U1	4.25 J3, U1	6.40 J3, U1	4.25 U1	4.05 S7, P6	5.75 B4, J3, S7				
	Butler, Pa.													
	Portsmouth, Ohio								4.05 P7	5.75 P7				
	Weirton, Wheeling, Follansbee, W. Va.					4.25 W3			4.05 W3	5.75 F3, W3	6.15 W3	8.60 W3		
	Youngstown, Ohio		\$78.00 C10	\$86.00 Y1, C10		4.25 Y1	6.40 Y1		4.05 U1, Y1	5.75 Y1, C5	6.15 U1, Y1	8.60 Y1	6.70 U1	12.45 B
WEST	Fontana, Cal.	\$72.00 K1	\$86.00 K1	\$105.00 K1		4.90 K1	7.05 K1	5.25 K1	4.825 K1	7.65 K1	7.25 K1		8.10 K1	14.55 B
	Geneva, Utah		\$78.00 C7			4.25 C7	6.40 C7							
	Kansas City, Mo.					4.85 S2	7.00 S2		4.65 S2				7.30 S2	
	Los Angeles, Torrance, Cal.		\$87.50 B2	\$106.00 B2		4.95 B2, C7	7.10 B2		4.80 B2, C7					
	Minnequa, Colo.					4.70 C6			5.15 C6					
	San Francisco, Niles, Pittsburg, Cal.		\$87.50 B2			4.90 B2, 4.95 P9	7.05 B2		4.90 B2, C7					
	Seattle, Wash.		\$91.50 B2			5.00 B2	7.15 B2		5.05 B2, P12					
	Atlanta, Ga.								4.25 A8					
SOUTH	Fairfield, Ala. City, Birmingham, Ala.	\$64.00 T2	\$78.00 T2			4.25 T2, C16, 4.28 R3	6.40 T2		4.05 R3, T2, C16		6.15 T2			
	Houston, Tex.		\$85.00 S2	\$93.00 S2		4.65 S2	6.85 S2		4.45 S2				7.10 S2	

STEEL  
PRICES(Effective  
July 20, 1954)

Italics identify producers listed in key at end of table. Base prices, f.o.b., mill in cents per lb., unless otherwise noted. Extras apply.

	SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE
	Hot-rolled 18 ga. & hvyr.	Cold- rolled	Galvanized 16 ga.	Enamel- ing 12 ga.	Long Tern 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot- rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Holloware Enameling 29 ga.
Bethlehem, Pa.													
Buffalo, N. Y.	4.05 B3	4.95 B3				6.10 B3	7.50 B3			4.675 W6			
Claymont, Del.													
Catesville, Pa.													
Cambria, Pa.	4.10 A2					6.10 A2							
Harrisburg, Pa.													
Hartford, Conn.													
Johnstown, Pa.										4.675 B3			
Fairless, Pa.	4.10 U1	5.00 U1				6.15 U1	7.55 U1				\$8.80 U1	\$7.50 U1	
New Haven, Conn.													
Phenixville, Pa.													
Spartan Pl., Md.	4.05 B3	4.95 B3	5.45 B3			6.10 B3	7.50 B3	8.20 B3		4.775 B3	\$8.80 B3	\$7.50 B3	
Worcester, Mass.										4.975 A5			
Trenton, N. J.													
Alton, Ill.										4.85 L1			
Ashland, Ky.	4.05 A7		5.45 A7	5.375 A7									
Canton-Massillon, Deer, Ohio			5.45 R1, R3						5.175 R1				
Chicago, Joliet, Ill.	4.05 A1, W8					6.10 U1				4.675 A5, N4, R3			
Stirling, Ill.										4.775 N4			
Cleveland, Ohio	4.05 J3, R3	4.95 J3, R3		5.375 R3		6.10 J3, R3	7.50 J3, R3			4.675 A5			
Detroit, Mich.	4.20 G3, M2	5.10 G3				6.25 G3	7.65 G3						
Newport, Ky.	4.06 N5		5.45 N5										
Gary, Ind. Harbor, Indiana	4.05 J3, U1, Y1	4.95 J3, U1, Y1	5.45 U1, J3	5.375 J3, U1	5.85 U1	6.10 U1, J3, Y1	7.50 U1, Y1				\$8.70 J3, U1, Y1	\$7.40 J3, U1	6.10 U1, Y1
Granite City, Ill.	4.25 G2	5.15 G2	5.65 G2	5.575 G2								\$7.60 G2	6.30 G2
Kokomo, Ind.	4.15 C9		5.55 C9						5.20 C9	4.775 C9			
Mansfield, Ohio					5.85 E2				5.175 E2				
Middletown, Ohio		4.95 A7		5.375 A7	5.85 A7								
Niles, Ohio	4.05 S1, R3	4.95 R3	5.45 N3	6.725 N3	5.85 N3	6.10 S1, R3	7.50 R3				\$8.70 R3	\$7.40 R3	
Sharon, Pa.	5.30 N3	5.975 N3											
Pittsburgh, Pa.	4.05 J3, U1, P6, A7	4.95 J3, U1, P6	5.45 U1	5.375 U1		6.10 J3, U1	7.50 J3, U1	8.20 U1		4.675 A5 4.875 P6	\$8.70 J3, U1	\$7.40 J3, U1	6.10 U1
Butler, Pa.													
Portsmouth, Ohio	4.05 P7	4.95 P7								4.675 P7			
Warton, Wheeling, Falls, W. Va.	4.05 W3, W5	4.95 W3, W5, F3	5.45 W3, W5		5.85 W3, W5	6.10 W3	7.50 W3				\$8.70 W3, W5	\$7.40 W3, W5	6.10 F3, W5
Youngstown, Ohio	4.05 U1, Y1	4.95 Y1		5.375 Y1		6.10 U1, Y1	7.50 Y1			4.625 Y1			
Fontana, Cal.	4.825 K1	6.05 K1				6.875 K1	8.55 K1			5.475 K1			
Genoa, Utah	4.15 C7					6.45 C7							
Kansas City, Mo.													
Los Angeles, Torrance, Cal.										5.475 C7, B2			
Minneapolis, Colo.										4.925 C6			
San Francisco, Niles, Pittsburg, Cal.	4.75 C7	5.90 C7	6.20 C7							5.325 C7	\$9.45 C7	\$8.15 C7	
Seattle, Wash.													
Atlanta, Ga.													
Fairfield, Ala.	4.05 R3, T2	4.95 T2	5.45 R3, T2			6.10 T2			5.35 R3	4.675 T2, R3	\$8.80 T2	\$7.50 T2	
Alabama City, Ala.													
Houston, Texas	4.45 S2									5.075 S2			

† Special coated mfg.  
tolls deduct 95¢ from  
1.25-lb coke base box  
price. Can-making quality  
blackplate 55 to 128 lb  
deduct \$2.20 from 1.25-lb  
coke base box.  
\* COKES: 1.50 lb  
add 25¢.  
ELECTRO: 0.50-lb add  
25¢; 0.75-lb add 65¢;  
1.00-lb add \$1.20.

IRON AGE		Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.										
STEEL PRICES (Effective July 20, 1954)		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfg.'s. Brand
EAST	Bethlehem, Pa.				5.075 B3	6.625 B3	6.45 B3					
	Buffalo, N. Y.	4.30 B3 4.33 R3	4.30 B3 4.33 R3	5.45 B5	5.075 R3 5.165 R3	6.625 B3,B5	6.45 B3	4.225 B3			6.45 B3	5.75 W6
	Claymont, Del.							4.225 C4		5.80 C4		
	Coatesville, Pa.							4.225 L4		5.80 L4		
	Conshohocken, Pa.							4.225 A2	5.275 A2		6.45 A2	
	Harrisburg, Pa.							3.85 C3	5.15 C3			
	Hartford, Conn.			5.90 R3		6.925 R3						
	Johnstown, Pa.	4.30 B3	4.30 B3		5.075 B3		6.45 B3	4.225 B3		5.80 B3	6.45 B3	5.75 B3
	Fairless, Pa.	4.45 U1	4.45 U1		5.225 U1							
	Newark, N. J.			5.85 W10		6.80 W10						
	Camden, N. J.			5.85 P10								
	Putnam, Conn.			5.95 W10								
	Sparrows Pt., Md.		4.30 B3					4.225 B3		5.80 B3	6.45 B3	5.85 B3
	Palmer, Worcester, Mansfield, Mass.			5.95 B5		7.075 B5						6.05 A1, W6
	Readville, Mass.											
MIDDLE WEST	Alton, Ill.	4.50 L1										5.925 L1
	Ashland, Newport, Ky.							4.225 A7, N5		5.80 N5		
	Canton-Massillon, Mansfield, Ohio			5.40 R2 5.44 R3	4.875 T5 5.115 R3	6.325 T5 6.665 R2,R3		4.225 E2				
	Chicago, Joliet, Ill.	4.30 U1, N4, W8 4.37 R3	4.30 N4 4.37 R3	5.40 A5, W10, W8, B5, L2	5.075 U1, W8 5.145 R3	6.625 A5, W8, W10, L2, B5		4.225 U1, W8, I3, A1	5.275 U1	5.80 U1	6.45 U1	5.75 A5, R3, N4, W6
	Cleveland, Ohio	4.36 R1	4.36 R3	5.40 A5, C13		6.665 A5, C13		4.225 J3 4.285 R3	5.275 J3		6.45 J3	5.75 A5, C13
	Detroit, Mich.	4.45 R5, G3		5.55 R5 5.60 R5, P8 5.65 P3	5.175 R5 5.225 G3	6.775 R5 6.825 B5, P3, P8	6.60 G3	4.375 G3			6.60 G3	
	Duluth, Minn.											5.75 A5
	Gary, Ind. Harbor, Crawfordsville	4.30 I3, U1, Y1	4.30 I3, U1, Y1	5.40 A5 5.47 R3	5.075 I3, U1, Y1	6.525 M5 6.695 R3	6.45 U1, I3, Y1	4.225 I3, U1, Y1	5.275 I3	5.80 U1	6.45 U1, I3, Y1	5.85 M4
	Granite City, Ill.							4.425 G2				
	Kokomo, Ind.											5.85 C9
	Sterling, Ill.	4.40 N4	4.40 N4									5.85 N4
	Niles, Ohio Sharon, Pa.	4.34 R3						4.225 S1		5.80 S1	6.45 S1	
	Pittsburgh, Pa. Midland, Pa.	4.30 J3, U1, C11	4.30 J3, U1	5.40 A5, C8, C11 J3, W10, B4 5.46 R3	5.075 U1, C11	6.625 A5, C11, W10, C8 6.685 R3	6.45 J3, U1	4.225 J3, U1	5.275 U1	5.80 U1	6.45 J3, U1	5.75 A5, J, P6
	Portsmouth, Ohio											5.75 P7
	Weirton, Wheeling, Follansbee, W. Va.	4.30 W3						4.225 W3, W5				
Youngstown, Ohio	4.30 U1, Y1, C10 4.35 R3	4.30 U1, Y1 4.35 R3	5.40 F2, Y1, C10	5.075 U1, Y1, C10	6.675 Y1, C10 6.665 F2	6.45 U1, Y1	4.225 U1, Y1			6.45 Y1	5.75 Y1	
WEST	Emeryville, Cal.	5.05 J5	5.05 J5									
	Fontana, Cal.	5.00 K1	5.00 K1		6.125 K1		7.70 K1	4.875 K1		6.85 K1	7.15 K1	
	Geneva, Utah							4.225 C7			6.45 C7	
	Kansas City, Mo.	4.90 S2	4.90 S2		5.675 S2		7.05 S2					6.35 S2
	Los Angeles, Torrance, Cal.	5.00 B2, C7	5.00 B2, C7	6.85 R3 7.16 R3	6.125 B2		7.15 B2					6.70 B2
	Minnequa, Colo.	4.75 C6	4.75 C6					5.075 C6				5.90 C6
	Portland, Ore.	4.90 O2										
	San Francisco, Niles, Pittsburg, Cal.	5.00 C7, P9 5.05 B2	5.00 C7, P9 5.05 B2				7.20 B2					6.70 C7
	Seattle, Wash.	5.05 B2, P12, N6	5.05 B2, P12				7.20 B2	5.125 B2		6.70 B2	7.35 B2	
	SOUTH	Atlanta, Ga.	4.50 A8	4.50 A8								
Fairfield, Ala. City, Birmingham, Ala.		4.30 T2, C16 4.33 R3	4.30 T2, C16 4.33 R3				6.45 T2	4.225 T2 4.255 R3			6.45 T2	5.75 A3, T2
Houston, Ft. Worth, Lone Star, Tex.		4.70 S2	4.70 S2		5.475 S2		6.85 S2	4.625 S2		6.20 S2	6.85 S2	6.25 S2



# Steel Prices

(Effective July 20, 1954)

## Key to Steel Producers

With Principal Offices

- A1 Acme Steel Co., Chicago
- A2 Alan Wood Steel Co., Conshohocken, Pa.
- A3 Allegheny Ludlum Steel Corp., Pittsburgh
- A4 American Clad Metals Co., Carnegie, Pa.
- A5 American Steel & Wire Div., Cleveland
- A6 Angell Nail & Chaplet Co., Cleveland
- A7 Arisco Steel Corp., Middletown, O.
- A8 Atlantic Steel Co., Atlanta, Ga.
- B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
- B2 Bethlehem Pacific Coast Steel Corp., San Francisco
- B3 Bethlehem Steel Co., Bethlehem, Pa.
- B4 Blair Strip Steel Co., New Castle, Pa.
- B5 Bliss & Laughlin, Inc., Harvey, Ill.

- C1 Calstrip Steel Corp., Los Angeles
- C2 Carpenter Steel Co., Reading, Pa.
- C3 Central Iron & Steel Co., Harrisburg, Pa.
- C4 Claymont Products Dept., Claymont, Del.
- C5 Cold Metal Products Co., Youngstown, O.
- C6 Colorado Fuel & Iron Corp., Denver
- C7 Columbia Geneva Steel Div., San Francisco
- C8 Columbia Steel & Shafting Co., Pittsburgh
- C9 Continental Steel Corp., Kokomo, Ind.
- C10 Copperweld Steel Co., Pittsburgh, Pa.
- C11 Crucible Steel Co. of America, New York
- C12 Cumberland Steel Co., Cumberland, Md.
- C13 Cuyahoga Steel & Wire Co., Cleveland
- C14 Compressed Steel Shafting Co., Readville, Mass.
- C15 G. O. Carlson, Inc., Thornedale, Pa.
- C16 Canara Steel Div., Birmingham

- D1 Detroit Steel Corp., Detroit
- D2 Detroit Tube & Steel Div., Detroit
- D3 Driver Harris Co., Harrison, N. J.
- D4 Dickon Weatherproof Nail Co., Evanston, Ill.

- E1 Eastern Stainless Steel Corp., Baltimore
- E2 Empire Steel Co., Mansfield, O.

- F1 Fifth Sterling, Inc., McKeesport, Pa.
- F2 Fitzsimmons Steel Corp., Youngstown
- F3 Follansbee Steel Corp., Follansbee, W. Va.

- G1 Globe Iron Co., Jackson, O.

- G2 Granite City Steel Co., Granite City, Ill.
- G3 Great Lakes Steel Corp., Detroit
- G4 Greer Steel Co., Dover, O.

- H1 Hanna Furnace Corp., Detroit

- I2 Ingersoll Steel Div., Chicago
- I3 Inland Steel Co., Chicago
- I4 Interlake Iron Corp., Cleveland

- J1 Jackson Iron & Steel Co., Jackson, O.
- J2 Jessop Steel Corp., Washington, Pa.
- J3 Jones & Laughlin Steel Corp., Pittsburgh
- J4 Jolyn Mig. & Supply Co., Chicago
- J5 Judson Steel Corp., Emeryville, Calif.

- K1 Kaiser Steel Corp., Fontana, Cal.
- K2 Keystone Steel & Wire Co., Peoria
- K3 Koppers Co., Granite City, Ill.

- L1 Laclede Steel Co., St. Louis
- L2 La Salle Steel Co., Chicago
- L3 Lone Star Steel Co., Dallas
- L4 Lukens Steel Co., Coatesville, Pa.

- M1 Mahoning Valley Steel Co., Niles, O.
- M2 McLouth Steel Corp., Detroit
- M3 Mercer Tube & Mig. Co., Sharon, Pa.
- M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
- M5 Monarch Steel Co., Inc., Hammond, Ind.
- M6 Mystic Iron Works, Everett, Mass.

- N1 National Supply Co., Pittsburgh
- N2 National Tube Div., Pittsburgh
- N3 Niles Rolling Mill Div., Niles, O.
- N4 Northwestern Steel & Wire Co., Sterling, Ill.
- N5 Newport Steel Corp., Newport, Ky.
- N6 Northwest Steel Rolling Mills, Seattle
- N7 Newman Crosby Steel Co., Pawtucket, R. I.

- O1 Oliver Iron & Steel Co., Pittsburgh
- O2 Oregon Steel Mills, Portland

- P1 Page Steel & Wire Div., Monessen, Pa.
- P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
- P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
- P4 Pittsburgh Coke & Chemical Co., Pittsburgh
- P5 Pittsburgh Screw & Bolt Co., Pittsburgh
- P6 Pittsburgh Steel Co., Pittsburgh
- P7 Portsmouth Div., Detroit Steel Corp., Detroit

- P8 Plymouth Steel Co., Detroit
- P9 Pacific States Steel Co., Niles, Cal.
- P10 Precision Drawn Steel Co., Camden, N. J.
- P11 Production Steel Strip Corp., Detroit
- P12 Pacific Steel Rolling Mills, Seattle

- R1 Reeves Steel & Mig. Co., Dover, O.
- R2 Reliance Div., Eaton Mig. Co., Massillon, O.
- R3 Republic Steel Corp., Cleveland
- R4 Roebling Sons Co., John A., Trenton, N. J.
- R5 Rotary Electric Steel Co., Detroit
- R6 Rodney Metals, Inc., New Bedford, Mass.
- R7 Rome Strip Steel Co., Rome, N. Y.

- S1 Sharon Steel Corp., Sharon, Pa.
- S2 Sheffield Steel Corp., Kansas City
- S3 Shenango Furnace Co., Pittsburgh
- S4 Simonds Saw & Steel Co., Fitchburg, Mass.
- S6 Standard Forging Corp., Chicago
- S7 Stanley Works, New Britain, Conn.
- S8 Superior Drawn Steel Co., Monaca, Pa.
- S9 Superior Steel Corp., Carnegie, Pa.
- S10 Sweet's Steel Co., Williamsport, Pa.

- T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
- T2 Tennessee Coal & Iron Div., Fairfield
- T3 Tennessee Products & Chem. Corp., Nashville
- T4 Thomas Strip Div., Warren, O.
- T5 Timken Steel & Tube Div., Canton, O.
- T6 Tremont Nail Co., Warcham, Mass.
- T7 Texas Steel Co., Fort Worth

- U1 United States Steel Corp., Pittsburgh
- U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
- U3 Fred Ulbrich & Sons, Wallingford, Conn.
- U4 U. S. Pipe & Foundry Co., Birmingham

- W1 Wallingford Steel Co., Wallingford, Conn.
- W2 Washington Steel Corp., Washington, Pa.
- W3 Weirton Steel Co., Weirton, W. Va.
- W4 Wheatland Tube Co., Wheatland, Pa.
- W5 Wheeling Steel Corp., Wheeling, W. Va.
- W6 Wickwire Spencer Steel Div., Buffalo
- W7 Wilson Steel & Wire Co., Chicago
- W8 Wisconsin Steel Co., S. Chicago, Ill.
- W9 Woodward Iron Co., Woodward, Ala.
- W10 Wycoff Steel Co., Pittsburgh
- W11 Worcester Pressed Steel Co., Worcester, Mass.
- Y1 Youngstown Sheet & Tube Co., Youngstown

## PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about \$200 per net ton.

	BUTTWELD														SEAMLESS							
	1/2 In.		3/4 In.		1 In.		1 1/4 In.		1 1/2 In.		2 In.		2 1/2-3 In.		2 In.		2 1/2 In.		3 In.		3 1/2-4 In.	
	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.	Bk.	Gal.
STANDARD T. & C.																						
Sparrows Pt. B3	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Youngstown R3	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fontana K1	23.75	4.5	13.75	+0.5	16.25	1.0	18.75	3.75	19.25	4.75	19.75	5.25	21.75	5.0								
Pittsburgh J3	21.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Alton, Ill. L1	21.75	8.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Sharon M2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Fairless N2	21.75	6.5	24.75	10.5	27.25	14.0	29.75	14.75	30.25	15.75	30.75	16.25	32.25	16.0								
Pittsburgh N1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Wheeling W5	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Wheatland W4	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0								
Youngstown Y1	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
Indiana Harbor Y1	22.75	7.5	25.75	11.5	28.25	15.0	30.75	15.75	31.25	16.75	31.75	17.25	33.25	17.0								
Lorain N2	23.75	8.5	26.75	12.5	29.25	16.0	31.75	16.75	32.25	17.75	32.75	18.25	34.25	18.0	13.5	+1.50	17.5	0.75	20.0	3.25	21.5	4.75
EXTRA STRONG																						
PLAIN ENDS																						
Sparrows Pt. B3	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Youngstown R3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Fairless N2	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Fontana K1	14.25		18.25		20.25		20.75		21.25		21.75		22.25									
Pittsburgh J3	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Alton, Ill. L1	25.25	11.5	29.25	15.5	31.25	19.0	31.75	17.75	32.25	18.75	32.75	19.25	33.25	18.0								
Sharon M2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Pittsburgh N1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Wheeling W5	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Wheatland W4	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0								
Youngstown Y1	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75
Indiana Harbor Y1	26.25	12.5	30.25	16.5	32.25	20.0	32.75	18.75	33.25	19.75	33.75	20.75	34.25	19.0								
Lorain N2	27.25	13.5	31.25	17.5	33.25	21.0	33.75	19.75	34.25	20.75	34.75	21.25	35.25	20.0	14.0		19.0	3.25	21.5	5.75	26.5	10.75

Threads only, butt weld and seamless 2 1/4 pt. higher discount. Plain ends, butt weld and seamless, 3-in. and under, 4 1/2 pt. higher discount. Butt weld jobbers' discount, 5 pct. Galvanized discounts based on zinc price in range of over 9¢ to 11¢ incl. per lb, East St. Louis. For each 2¢ change in zinc, discounts vary as follows: 1/2, 3/4 and 1-in., 2 pt.; 1 1/4, 1 1/2 and 2-in., 1 1/2 pt.; 2 1/2 and 3-in., 1 pt. e.g., zinc price in range of over 11¢ to 13¢ would lower discounts; zinc price in range of over 7¢ to 9¢ would increase discounts. — East St. Louis zinc price now 11.00¢ per lb.

(Effective July 20, 1954)

To identify producers, see Key on preceding page.

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Screw Spikes	Tie Plates	Track Bolts Tread
Bessemer U1	4.45	5.35	5.425				
So. Chicago R3				7.30			
Ensley T2	4.45	5.35					
Fairfield T7		5.35		7.30		5.275	
Gary U1	4.45	5.35				5.275	
Int. Harbor I3	4.45		5.425	7.30		5.275	
Johnstown B3		5.35					
Joliet U1		5.35	5.425				
Kansas City S2				7.30			11.00
Lackawanna B3	4.45	5.35	5.425			5.275	
Minnequa C6	4.45	5.85	5.425	7.30		5.275	11.00
Pittsburgh O1					11.00	11.50	
Pittsburgh P5					11.00	11.50	
Pittsburgh J3				7.30			
Seattle B2				7.80		5.425	11.50
Stedion C3	4.45		5.425			5.275	
Struthers Y1				7.30			
Torrance C7						5.425	
Youngstown R3				7.30			

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled  (Cu: Lengths) <sup>a</sup>	Cold-Reduced (Coiled or Cut Length)	
		Semi-Processed	Fully Processed
Field .....	8.025	8.225	.....
Armature .....	8.50	8.75	9.25
Elect. ....	9.10	9.35	9.85
Motor .....	10.10	10.35	10.85
Dynamo .....	11.00	11.25	11.75
Trans. 72 .....	11.95	12.20	12.70
Trans. 65 .....	12.50	Grain Oriented	
Trans. 58 .....	13.00		
Trans. 52 .....	14.00		
		Trans. 80 .....	16.60
		Trans. 73 .....	17.10

Producing points: Beech Bottom (W5); Brackenridge (A5); Granite City (G2); Indiana Harbor (I5); Mansfield (E2); Newport, Ky. (N5); Niles, O. (N3); Vandergrift (U1); Warren, O. (R3); Zanesville (A7).

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa., <i>L4</i> .....	\$32.7	
Washington, Pa., <i>J2</i> .....		
Claymont, Del., <i>C4</i> .....		
New Castle, Ind., <i>I2</i> .....		\$2.50
Nickel-carbon		
10 pct. Coatesville, Pa., <i>L4</i> .....	37.5	
Inconel-carbon		
10 pct., Coatesville, Pa., <i>L4</i> .....	46.10	
Monel-carbon		
10 pct. Coatesville, Pa., <i>L4</i> .....	38.90	

\* Includes annealing and pickling, sandblasting.

[illegible]

Base Quantities (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanized sheets, for quantity.

Exceptions: (1) 500 to 1499 lb. (2) 20,000 lb. or over. (3) 450 to 1499 lb. (4) 500 to 9999 lb. (5) 1000 lb. or over. (6) 400 to 1499 lb. (7) 1500 to 3499 lb. (8) 2000 to 5999 lb.

	Standard & Coated Nails					
F.o.b. Mill	Woven Wire Fence 9-15½ ga.		Topo Fence Posts		Single Loop Balm Ties	
	Gal	Col	Gal	Col	Gal	Col
Alabama City R3.....	137	146		155	150	6.90
Alliquippa, Pa. J3.....	137	149			154	9.90
Atlanta A8.....	139	151		157	164	6.90
Bartonville K2.....	139	151		157	164	6.90
Buffalo W6.....						6.90
Chicago, Ill. N4.....	137	149		155	162	6.90
Cleveland A6.....	142					7.60
Cleveland A5.....						6.90
Crawfordsville M4.....	139	151		157	159	6.90
Donora, Pa. A5.....	137	146		155	156	6.90
Duluth A5.....	137	146	150	155	156	6.90
Fairfield, Ala. T2.....	137	146		155	156	6.90
Galveston D6.....						7.90
Houston S2.....	145	154			167	7.30
Johnstown, Pa. B3.....	137	149			162	6.90
Joliet, Ill. A5.....	137	146		155	156	6.90
Kokomo, Ind. C9.....	139	148		157	161	7.00
Los Angeles B2.....						7.85
Kansas City S2.....	148	158		167	171	7.50
Minnequa C6.....	142	156	150	160	168	7.15
Menessen P6.....					163	6.90
Moline, Ill. R3.....				145		7.40
Pittsburg, Cal. C7.....	156	169		179	179	7.85
Portsmouth P7.....						6.90
Rainin, Pa. A5.....	137	146			159	6.90
So. Chicago R3.....	137	146	145	155	159	6.90
S. San Francisco C6.....					179	7.40
Sparrows Pt. B3.....	139			157	164	7.00
Struthers, O. Y1.....						6.90
Worcester A5.....	143					7.20
Williamsport, Pa. S10.....						

Cut Nails, carloads, base \$8.30 per keg at Conshohocken.  
Pa. (42).

\* Alabama City and So. Chicago don't include zinc extra. Galvanized products computed with zinc at 11.0¢ per lb.

Cents Per Lb F.o.b. Mill	CARBON CONTENT				
	0.26 0.40	0.41 0.60	0.61 0.80	0.81 1.05	1.06 1.35
Bridgeport, Conn. <i>S7</i> .....	5.75	8.05	9.00	10.95	13.25
Carnegie, Pa. <i>S9</i> .....		7.65	8.60	10.55	12.85
Cleveland <i>A5</i> .....	5.75	8.05	9.00	11.15	13.65
Detroit <i>D1</i> .....	5.90	8.25	9.20	10.95	
Detroit <i>D2</i> .....	5.90	8.25	9.20		
Harrison, N. J. <i>C11</i> .....					
Indianapolis <i>C5</i> .....	5.75	8.05	9.00	10.95	
New Castle, Pa. <i>B4</i> .....	5.75	8.05	9.00	10.95	
New Haven, Conn. <i>D1</i> .....	6.20	8.35	9.30	11.25	
Riversdale, Ill. <i>A1</i> .....	5.85	8.05	9.00	11.15	13.65
Buffalo, N. Y. <i>R7</i> .....					
Sharon, Pa. <i>S1</i> .....	5.75	8.05	9.00	10.95	13.25
Trenton <i>R4</i> .....		8.35	9.30	11.25	13.65
Wallingford <i>W1</i> .....	6.20	8.35	9.30	11.25	13.65
Warren, Ohio <i>T4</i> .....	5.75	8.05	9.00	10.95	13.25
Weirton, W. Va. <i>W3</i> .....	5.85	8.05	9.00	10.95	13.25
Worcester, Mass. <i>A5</i> .....	6.60	8.35	9.30	11.45	14.15
Yonkersown <i>C5</i> .....	5.75	8.05	9.00	10.95	

\* Sold on Pittsburgh base.

\$ per 100 ft. carload lots, cut 10 to 24 ft. F.o.b. Mill	Size		Seamless		Elec. Weld	
	OD-In.	B.W. Ga.	H.R.	C.D.	H.R.	C.D.
Babcock & Wilcox...	2	13	28.33	33.97	26.51	31.13
	2½	12	38.15	45.74	35.70	43.00
	3	12	44.05	52.82	41.23	49.00
	3½	11	51.43	61.66	48.13	58.00
	4	10	68.29	81.28	63.92	77.00
National Tube.....	2	13	28.33	33.97	26.51	31.13
	2½	12	38.15	45.74	35.70	43.00
	3	12	44.05	52.82	41.23	49.00
	3½	11	51.43	61.66	48.13	58.00
	4	10	68.29	81.28	63.92	77.00
Pittsburgh Steel....	2	13	28.33	33.97	26.51	31.13
	2½	12	38.15	45.74	35.70	43.00
	3	12	44.05	52.82	41.23	49.00
	3½	11	51.43	61.66	48.13	58.00
	4	10	68.29	81.28	63.92	77.00

# Miscellaneous Prices

(Effective July 20, 1954)

## TOOL STEEL

F.o.b. Mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	\$1.54
18	4	1	—	5	2.185
18	4	1	—	—	1.705
1.5	4	2.5	8	—	.90
6	4	2	6	—	1.29
High-carbon chromium					.73
Oil hardened manganese					.405
Special carbon					.37
Extra carbon					.31
Regular carbon					.26

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

## CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	\$111.50 to \$115.30
6 to 24-in., del'd N. Y.	115.00 to 116.00
6 to 24-in., Birmingham	98.00 to 102.50
6-in. and larger f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipments less	\$129.50 to \$131.50
Class "A" and gas pipe, \$5 extra; 4-in. pipe is \$5 a ton above 6-in.	

## LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower Lake ports. Prices effective July 1, 1953, to end of 1954 season.

	Gross Ton
Openhearth lump	\$11.15
Old range, bessemer	10.30
Old range, nonbessemer	10.35
Mesabi, bessemer	10.05
Mesabi, nonbessemer	9.90
High phosphorus	9.90

Prices based on upper Lakes rail freight rates, Lake vessel freight rates, handling and unloading charges, and taxes thereon, in effect on June 24, 1953. Increases or decreases after such date are for buyer's account.

## COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	\$14.25 to \$14.50
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	\$16.50 to \$17.00
Foundry, oven coke	
Buffalo, del'd	\$28.08
Chicago, f.o.b.	24.50
Detroit, f.o.b.	25.50
New England, del'd	26.05
Seaboard, N. J., f.o.b.	24.00
Philadelphia, f.o.b.	33.00
Swedeland, Pa., f.o.b.	33.85
Palmsville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	25.00
Cleveland, del'd	27.43
Cincinnati, del'd	26.56
St. Paul, f.o.b.	23.75
St. Louis, f.o.b.	26.00
Birmingham, f.o.b.	22.65
Lone Star, Tex., f.o.b.	18.50

## ELECTRODES

Cents per lb, f.o.b. plant, threaded, with nipples, unboxed

GRAPHITE			CARBON		
Diam. (in.)	Length (in.)	Price	Diam. (in.)	Length (in.)	Price
34	84	20.30	40	100, 110	8.95
30	72	20.00	38	110	8.95
12 to 18	72	20.00	30	110	8.95
7 to 10	80	21.00	24	72 to 84	9.10
8	80	23.25	20	90	9.95
4	40	26.00	17	72	9.10
3	40	27.25	14	72	9.50
2 1/2	30	28.00	10, 12	80	10.30
2	24	43.50	8	80	10.55

## BOLTS, NUTS, RIVETS, SCREWS

### Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

### Nuts, Hot Pressed, Cold Punched—Sq.

	Less Keg	K.	Less Keg	K.
1/2 in. & smaller	+2	15	+2	18
9/16 in. & 5/8 in.	+7	11	+32*	+10*
5/8 in. to 1 1/2 in.				
inclusive	+8	10	+27**	+6**
1 1/2 in. & larger	+9	9	+27	+6
** 9/16 to 5/8 in.				
** 5/8 to 1 1/2 in.				

### Nuts, Hot Pressed—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	2	18	+20	net
5/8 in. to 1 1/2 in.				
inclusive	+6	12	+25	+4
1 1/2 in. & larger	+8	10	+25	+4

### Nuts, Cold Punched—Hexagon

1/2 in. & smaller	11	26	8	23
9/16 in. & 5/8 in.	9	24	+2	15
5/8 in. to 1 1/2 in.				
inclusive	+1	16	+9	9
1 1/2 in. & larger	+16	3	+20	net

### Nuts, Semi-Finished—Hexagon

1/2 in. & smaller	23	36	14	28
9/16 in. & 5/8 in.	18	32	4	20
5/8 in. to 1 1/2 in.				
inclusive	8	23	+8	10
1 1/2 in. & larger	+14	5	+20	net
Light				
7/16 in. & smaller				
er	32	43		
1/2 in. thru 5/8 in.	26	37		
5/8 in. to 1 1/2 in.				
inclusive	18	30		

### Stove Bolts

	Pct Off List
Packaged, steel, plain finished 4 1/2—10	
Packaged, plain finish	25 1/2—10
Bulk, plain finish**	59*

\* Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

\*\* Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

### Rivets

	Base per 100 lb
1/2 in. & larger	\$8.90
7/16 in. and smaller	30

### Cap and Set Screws

	Pct Off List
(In bulk)	
Hexagon head cap screws, coarse or fine thread, 1/4 in. thru 5/8 in. x 6 in., SAE 1920, bright	40
1/4 in. thru 1 in. up to & including 6 in.	26
1/4 in. thru 5/8 in. x 6 in. & shorter	
high C double heat treat	43
1/4 in. thru 1 in. up to & including 6 in.	33
Milled studs	17
Flat head cap screws, listed sizes	12
Fillister head cap screws, listed sizes	7
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	37

### Machine and Carriage Bolts

	Pct Off List
Less Case	C.
1/2 in. & smaller x 6 in. & shorter	4
9/16 in. & 5/8 in. x 6 in. & shorter	5
5/8 in. & larger x 6 in. & shorter	3
All diam. longer than 6 in.	+4
Lag, all diam. x 6 in. & shorter	12
Lag, all diam. longer than 6 in.	8
Plow bolts	30

## REFRACTORIES

### Fire Clay Brick

Carloads per 1000

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add \$5.00)	\$109.00
No. 1 Ohio	102.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	102.00
No. 2 Ohio	98.00
Ground fire clay, net ton, bulk (except Salina, Pa., add \$1.50)	16.00

### Silica Brick

Mt. Union, Pa., Ensley, Ala.	\$115.00
Childs, Hays, Pa.	120.00
Chicago District	125.00
Western Utah	131.00
California	132.00
Super Duty	
Hays, Pa., Athens, Tex., Windham	132.00
Curtner, Calif.	150.00
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	19.00
Silica cement, net ton, bulk, Hays, Pa.	21.00
Silica cement, net ton, bulk, Chicago District, Ensley, Ala.	20.00
Silica cement, net ton, bulk, Utah and Calif.	28.50

### Chrome Brick

	Per net ton
Standard chemically bonded Balt.	\$86.00
Standard chemically bonded, Curtner, Calif.	96.25
Burned, Balt.	80.00

### Magnesite Brick

Standard Baltimore	\$109.00
Chemically bonded, Baltimore	97.50

### Grain Magnesite

	St. % in. grains
Domestic, f.o.b. Baltimore	
in bulk fines removed	\$64.40
Domestic, f.o.b. Chewelah, Wash., Luning, Nev.	
in bulk	38.00
in sacks	43.75

### Dead Burned Dolomite

	Per net ton
F.o.b. bulk, producing points in: Pa., W. Va., Ohio	\$14.50
Midwest	14.60
Missouri Valley	13.65

## FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill.	
Price, net ton; Effective CaF <sub>2</sub> content	
72 1/2 %	\$44.00
70 % or more	42.50
60 % or less	38.00

## METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f.	11.25¢
New York, ocean bags	
Canadian sponge iron, Del'd in East	12.0¢
F.o.b. shipping point	10.5¢
Domestic sponge iron, 98+ % Fe, carload lots	18.0¢
Electrolytic iron, annealed, 99.5+ % Fe	38.0¢
Electrolytic iron, unannealed, minus 325 mesh, 99+ % Fe	53.5¢
Hydrogen reduced iron minus 300 mesh, 98+ % Fe	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+ % Fe	83.0¢ to 14.48
Aluminum	31.5¢
Brass, 10 ton lots	29.50¢ to 36.50¢
Copper, electrolytic	43.50¢
Copper, reduced	43.50¢
Cadmium, 100-199 lb 95¢ plus metal value	
Chromium, electrolytic, 99% min., and quality, del'd...	33.60
Lead	21.00¢
Manganese	57.0¢
Molybdenum, 99%	32.75
Nickel, unannealed	89.50¢
Nickel, annealed	96.50¢
Nickel, spherical, unannealed	93.50¢
Silicon	43.50¢
Solder powder, 7.0¢ to 9.0¢ plus met. value	
Stainless steel, 302	91.0¢
Stainless steel, 316	11.10
Tin	14.04¢ plus metal value
Tungsten, 99% (65 mesh)	54.65
Zinc, 10 ton lots	17.5¢ to 25.0¢



# Ferroalloy Prices

(Effective July 20, 1954)

## Ferrochrome

Contract prices, cents per lb contained Cr, lump size, bulk, in carloads, delivered.  
66-72 Cr, 2% max. Si.  
0.025% C ... 34.50 0.20% C ... 33.50  
0.06% C ... 34.50 0.50% C ... 33.25  
0.10% C ... 34.00 1.00% C ... 33.00  
0.15% C ... 33.75 2.00% C ... 32.75  
65-69% Cr, 4.9% C ... 24.75  
62-66% Cr, 4.6% C, 6-9% Si ... 25.60

## S. M. Ferrochrome

Contract prices, cents per pound, chromium contained, lump size, delivered.  
High carbon type: 60.65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.  
Carloads ... 25.85  
Ton lots ... 28.00  
Less ton lots ... 29.50

## High-Nitrogen Ferrochrome

Low-carbon type 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 3¢ for each additional 0.25% of N.

## Chromium Metal

Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.  
0.10% max. C ... 1.18  
0.50% max. C ... 1.14  
9 to 11% C ... 1.11

## Low Carbon Ferrochrome Silicon

(Cr 34-41%, Si 42-49%, C 0.05% max.)  
Contract price, carloads, f.o.b. Niagara Falls, freight allowed, lump 4-in. x down, 24.75¢ per lb contained Cr plus 10.80¢ per lb contained Si. Bulk 2-in. x down, 25.05¢ per lb contained Cr plus 10.50¢ per lb contained Si. Bulk 1-in. x down, 25.25¢ per lb contained Cr plus 11.00¢ per lb contained Si.

## Calcium-Silicon

Contract price per lb of alloy, lump, delivered.  
30-33% Cr, 60-65% Si, 3.00 max. Fe.  
Carloads ... 19.00  
Ton lots ... 22.10  
Less ton lots ... 23.60

## Calcium-Manganese-Silicon

Contract prices, cents per lb of alloy, lump, delivered.  
16-20% Ca, 14-18% Mn, 53-59% Si.  
Carloads ... 20.00  
Ton lots ... 22.30  
Less ton lots ... 23.30

## SMZ

Contract price, cents per pound of alloy, delivered, 60-65% Si, 6-7% Mn, 5-7% Zr, 20% Fe ½ in. x 18 mesh.  
Ton lots ... 17.50  
Less ton lots ... 19.50

## V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5: 38-42% Cr, 17-19% Si, 8-11% Mn, packed.  
Carload lots ... 16.60  
Ton lots ... 18.10  
Less ton lots ... 19.35

## Graphidex No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%; Ti 9 to 11%, Ca 5 to 7%.  
Carload packed ... 17.50  
Ton lots to carload packed ... 18.50  
Less ton lots ... 20.00

## Ferromanganese

Maximum contract base price, f.o.b., lump size, base content 74 to 76 pct Mn; Cents per-lb

Producing Point  
Marietta, Ashabula, O.: Alloy,  
W. Va.; Sheffield, Ala.; Portland,  
Ore. ... 10.00  
Chairton, Pa. ... 10.00  
Sheridan, Pa. ... 10.00  
Philo, Ohio ... 10.00  
Add or subtract 0.1¢ for each 1 pct Mn above or below base content.  
Briquets, delivered, 66 pct Mn:  
Carloads, bulk ... 12.50  
Ton lots packed ... 14.05

## Spiegeleisen

Contract prices, per gross ton, lump, f.o.b. Palmerton, Pa.  
Manganese Silicon  
16 to 19% 3% max. ... \$84.00  
19 to 21% 3% max. ... 86.00  
21 to 23% 3% max. ... 88.50  
23 to 25% 3% max. ... 91.00

## Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.  
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.  
Carload, packed ... 36.95  
Ton lots ... 38.45

## Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.  
Carloads ... 30.00  
Ton lots ... 32.00  
250 to 1999 lb ... 34.00  
Less than 250 lb ... 37.00  
Premium for hydrogen-removed metal ... 0.75

## Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn ... 21.35¢

## Low-Carb Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.  
Carloads Ton Less  
0.07% max. C, 0.06% P, 90% Mn ... 30.00 31.85 32.05  
0.07% max. C ... 27.95 29.80 31.00  
0.15% max. C ... 27.45 29.30 30.50  
0.30% max. C ... 26.95 28.80 30.00  
0.50% max. C ... 26.45 28.30 29.50  
0.75% max. C, 80-85% Mn, 5.0-7.0% Si ... 23.45 25.30 26.50

## Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mo, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢.  
Carload bulk ... 11.00  
Ton lots ... 12.65  
Briquet contract basis carlots, bulk, delivered, per lb of briquet ... 12.65  
Ton lots, packed ... 14.25

## Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., \$92.00 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., \$89.50. Add \$1.00 per ton for each additional 0.50% Si up to and including 17%. Add \$1.45 for each 0.50% Mn over 1%.

## Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, packed.  
Ton lots Carloads  
96% Si, 2% Fe ... 20.10 18.00  
97% Si, 1% Fe ... 20.60 18.50

## Silicon Briquets

Contract price, cents per pound of briquet, bulk, delivered, 40% Si, 2 lb Si briquets.  
Carloads, bulk ... 6.20  
Ton lots ... 7.90

## Electric Ferrosilicon

Contract price, cents per lb contained Si, lump, bulk, carloads, delivered.  
25% Si ... 20.00 75% Si ... 13.80  
50% Si ... 10.80 85% Si ... 15.55  
65% Si ... 12.20 90.55% Si ... 17.00

## Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.  
Cast Turnings Distilled  
Ton lots ... \$2.05 \$2.95 \$3.75  
Less ton lots ... 2.40 3.30 4.55

## Ferrovanadium

35-55% contract, basis, delivered, per pound, contained V.  
Openhearth ... \$3.00-\$3.10  
Crucible ... 3.10-3.20  
High speed steel (Primor) ... 3.20-3.25

Alsiifer, 20% Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y., per lb.

Carloads ... 9.25¢  
Ton lots ... 10.11¢  
Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo ... 11.11¢  
Ferrocolumbium, 50-60%, 2 in. x D contract basis, delivered per pound contained Cb.  
Ton lots ... 9.54¢  
Less ton lots ... 9.51¢  
Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30% C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta ... 14.5¢  
Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo ... 11.2¢  
Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., \$4.00 unitage, per gross ton ... \$90.8¢  
10 tons to less carload ... \$110.8¢  
Ferrotitanium, 40% regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... 11.3¢  
Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti ... 11.4¢  
Less ton lots ... 1.5¢  
Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload, per net ton ... \$177.00¢  
Ferrotungsten, ¼ x down, packed, per pound contained W, ton lots, f.o.b. ... 23.31¢  
Molybdenic oxide, briquets or cana, per lb contained Mo, f.o.b. Langeloth, Pa. ... 11.10¢  
bags, f.o.b. Washington, Pa., Langeloth, Pa. ... 11.11¢  
Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound.  
Carload, bulk, lump ... 15.50¢  
Ton lots, packed lump ... 16.75¢  
Less ton lots, lump, packed ... 17.25¢  
Vanadium Pentoxide, 86-89% V<sub>2</sub>O<sub>5</sub> contract basis, per pound contained V<sub>2</sub>O<sub>5</sub> ... 11.21¢  
Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.  
Ton lots ... 21.00¢  
Zirconium, 12-15%, contract basis lump, delivered, per lb of alloy.  
Carload, bulk ... 8.00¢  
Boron Agents  
Borosil, contract prices per lb of alloy del. f.o.b. Philo, Ohio, freight allowed. B, 3-4% Si, 40-45%, per lb contained B ... 15.21¢  
Bortam, f.o.b. Niagara Falls  
Ton lots, per pound ... 4.40¢  
Less ton lots, per pound ... 5.00¢  
Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.  
Ton lots per pound ... 10.40¢  
Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, Ton lots ... 11.21¢  
F.o.b. Wash., Pa.: 100 lb up  
10 to 14% B ... 11¢  
14 to 19% B ... 11.21¢  
19% min. B ... 11.40¢  
Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over  
No. 1 ... 11.00¢  
No. 8 ... 6.00¢  
No. 79 ... 5.00¢  
Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.  
Ton lots ... 11.40¢  
Less ton lots ... 1.57¢  
Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered  
Less ton lots ... 12.40¢  
Silenz, contract basis, delivered  
Ton lots ... 45.00¢

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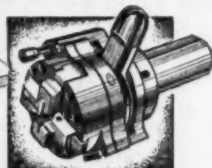
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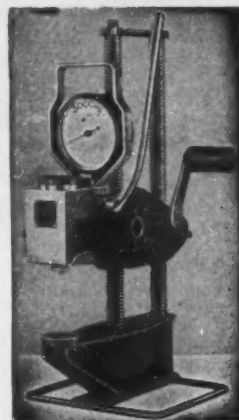
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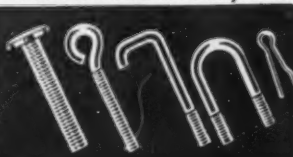
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- No. 2 VAN NORMAN Plain Horizontal Mill, new 1943
- No. 2MI CINCINNATI Vertical Mill, new 1951
- No. 3-24 CINCINNATI High Power Plain Mill, rectangular overarm
- 16" x 78" centers REED PRENTICE, Model AA Toolroom, 1943
- 27" x 12" centers LODGE & SHIPLEY Selective Geared Head Lathe, AC-MD
- 36" x 12" centers AMERICAN Heavy Duty 16 Speed Geared Head Lathe, AC-MD
- No. 3A WARNER & SWASEY Turret Lathe, Timken Spindle, electric chuck, tooling
- No. 3 WARNER & SWASEY Universal Turret Lathe, Serial 800,000, new 1944, two speed motor in base
- No. 4 WARNER & SWASEY Turret Lathe, Pre-selector head, Bar feed, new 1943
- No. 12 GISHOLT Automatic Lathe, new 1947
- 36" BULLARD High Speed Spiral Drive Vertical Turret Lathe, 200 RPM, fine feed, new 1942
- 42" BULLARD Spiral Drive Vertical Turret Lathe, extra high column
- 42" KING Vertical Boring Mill, 10 HP AC motor, power rapid traverse
- No. 7 GALLMEYER & LIVINGSTON Hydraulic Universal Tool & Cutter Grinder, power feeds, new 1943
- 30" MORTON Hydraulic Keyseater, 1942
- No. 6A MITTS & MERRILL Keyseater, capacity 0 to 4" width, 36" stroke, tooling
- 4' FOSDICK Sensitive Radial Drill, new 1951
- 4' HAMMOND Jackknife Radial Drill tapping attachment, new 1948
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- 6'-17" column CINCINNATI BICKFORD Super Service Radial Drill, power rapid traverse, motor on arm
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- 48" x 48" x 12' CINCINNATI Double Housing Planer, 2 rail heads, 1 side head, power rapid traverse

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## The Clearing House

NEWS OF USED AND REBUILT MACHINERY

**Pittsburgh Business Stagnant** . . . Business has been so slow in the Pittsburgh district that the usual summer slump has caused scarcely a ripple in the market—it's been with us since early in the year.

There are few encouraging signposts. Demand for electrical equipment has picked up slightly. Steel mills are back in the market now that new labor contracts have been signed. But coal mines continue in the doldrums.

A state law requiring hospitals and other public institutions to maintain auxiliary generating equipment for emergency use in event of power failure has stimulated some business for electrical dealers. Building contractors also are buying more for heavy road equipment.

But even so, electrical dealers say pickings are slim. Inquiries that used to be passed up are now being pursued, even small stuff, like 1/2-hp motors, is treated with respect these days.

**Labor Hurts Cranes** . . . Demand for steel mill equipment is slow generally, although some dealers say they are able to keep active by pushing for business.

Crane dealers are caught between the twin evils of customer insistence on price and quality, and high labor costs for dismantling of equipment. One operator recalls that at one time a 10-ton crane with a 50-ft span could be dismantled for about \$500, but the same job today costs between \$1200 and \$1500.

Crane people find they are working harder for less business with slimmer profit margins. One source has been working with a large mill for nearly 4 months on a deal that supposedly was tagged with a July deadline. But by mid-July the prospect still had not made up his mind whether to buy.

Another example of what is happening in the crane business:

A southwestern prospect asked

for a price on a 10-ton crane with a 50-ft span. Price quoted apparently was satisfactory but the prospect asked for an additional premium; he wanted the dealer to dismantle and ship the crane without extra charge.

**Report Auction Results** . . . In the interests of keeping member firms informed as to prices and transactions at auction sales throughout the nation, Machinery Dealers National Assn. passed a resolution at its recent Philadelphia convention recommending the following actions; 1) that MDNA places all members on mailing lists of every industrial auctioneer in the U.S., 2) MDNA chapters will assign a member to cover every auction and forward the price of each major machine tool to MDNA headquarters which will in turn issue mimeographed listings to all members.

It should be made clear that such a service rendering market data to the membership of a trade association does not violate either the letter of the law or the spirit of good business practice.

As the Supreme Court long since pointed out, an accurate knowledge and understanding of basic market conditions on the part of members of an industry tends to promote competition rather than restrict it.

The Court voiced its opinion as follows: "It was not the purpose or intent of the Sherman Anti-Trust Law to inhibit the intelligent conduct of business operations, nor do we (the Court) conceive that its purpose was to suppress such influences as might affect the operations of interstate commerce through the application to them of the individual intelligence of those engaged in commerce, enlightened by accurate information as to the essential elements of the economics (prices, sales etc.) of a trade or business, however gathered or disseminated."